AGRICULTURAL CHANGE IN THE COOK ISLANDS

STUDIES IN THE HUMAN ECOLOGY OF A PACIFIC MICROSTATE

A thesis

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CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF PLATES

Note: All photos by author unless otherwise acknowledged.

ABBREVIATIONS

APU	Agricultural Planning Unit, Cook Islands Ministry of Agriculture, Rarotonga.
ANZAAS	Australia New Zealand Association for the Advancement of Science
ASAC	Agricultural Services Advisory Committee
CAO	Chief Administration Officer
c.d.v.	imports valued in country of origin
CICC	Cook Islands Christian Church
CIDB	Cook Islands Development Bank (Rarotonga)
c.i.f.	imports valued including insurance and freight to destination
CIEMAC	Cook Islands Export and Marketing Corporation (proposed)
CIP	Cook Islands Party
CIPA	Cook Islands Progressive Association
CRS	Citrus Replanting Scheme
f.o.b.	exports valued at port of origin
GDP	Gross Domestic Product
MGA	Mangaian Growers' Association (Mangaia)
NZDSIR	New Zealand Department of Scientific and Industrial Research
NZMFA	New Zealand Ministry of Foreign Affairs (Wellington)
PIIDS	Pacific Islands Industrial Development Scheme
PPMB	Primary Produce Marketing Board (Rarotonga)
PSS	Price Support Scheme
RSA	Rural Systems Approach
SPARTECA	South Pacific regional trade agreement
SPC	South Pacific Commission (Noumea, New Caledonia)
SPEC	South Pacific Bureau for Economic Cooperation (Suva, Fiji)
SSA	Seasonal Servicing Advances
UNDP	United Nations Development Programme
USP	University of the South Pacific (Suva, Fiji)
VSA	Volunteer Service Abroad (Wellington)

GLOSSARY OF MAORI TERMS

akari	mature coconut (Cocos nucifera), or meat of
aronga mana	chiefs: people with traditional authority
ariki	person of highest rank in a tribe
atinga	offering, payment in kind
ei	a garland of flowers, leaves or shells
imene tuki	singing of specially-composed hymns
kavana	Mangaian term for land chief (equiv. mataiapo)
kai	food
kainga	homestead, includes other family lands
kai ti	light meal, snack
kape	giant taro (Alocasia macrorrhiza)
kave eva	mourning ceremony
kete	carrying basket made to local design, usually from coconut frond
kiato	traditional ranking, usually within a chiefly family
komono	traditional title for sub-chiefs
kopu ariki	family with an ariki title
kopu tangata	family, relatives, kinsmen
kumara	sweet potato (Ipomoea batatas)
makatea	raised formation of dead coral
mama	mature woman
mana	power, sanctification, status
maniota	cassava (Manihot esculenta)
Maori	indigenous to Cook Islands, people and culture
mapu	young person, youth
marae	traditional sacred place for religious and social purposes
mario	banana (Musa sp.) grown particularly on Mitiaro: suitable for drying
mataiapo	chief under an ariki, important in land matters and traditional organisation.
matakeinanga	traditional term for land-holding group or corporation
metua	parent, head of household
ngati	lineage - group tracing common descent
ngutuare	household

nu	immature coconut (Cocos nucifera) for drinking
nuku	enactment (play) usually of a bible story
oi	wild yam (Dioscorea bulbifera)
oire	village
pai	raised beds for growing taro in the swamp lands, usually rectangular and formed with a shovel
Papaa	european, pertaining to the culture of the 'white race'.
pia	starch, particularly coarse 'flour' or starch extracted from maniota
poi	taro mixture which is fermented and baked
poke	'pudding', usually made from cassava starch and fruits such as bananas, and baked in an umu
puna	taro-swamp lands
puraka	hardy, salt-resistant swamp taro (Cyrtosperma chamissonis)
rangatira	tribal title, often given to son of a mataiapo or ariki
raui	forbidden, restriction of access or use, usually applied to food sources
rukau	edible taro leaves, usually cooked with something fatty
tai	1) sea 2) sauce made from mature coconut
tamariki angai	children who live with a family, feeding children, adopted children
tapere	territorial sub-division in a large district, usually a segment encompassing a variety of an island's resources
tapu	sacred, forbidden
taro	edible tuber (Colocasia esculenta) usually cultivated in swamps
taro tarua	'dry land' taro (Xanthosoma sagittifolium)
taro vai	'paddy' taro, grown in irrigated swamp, as distinguished from taro grown on raised beds (pai)
taunga	specialist in a particular art/craft, usually a herbalist spiritualist and practitioner of Maori medicines in contemporary use
tere	party of visitors or travellers
teretere	a frequently repeated exchange of tere parties such as with church groups.
ti	plant with large edible roots (Cordyline fruticosa)
tiare maori	heavily perfumed white flower from Gardenia taitensis
tiopu	stew-like mixture of vegetables and meat
tivaevae	patchwork or appliqué bedspread

taonga	title, honorary position
tuanga	named section of land (enua)
tupapaku	ghosts
tupuna	ancestor, grand parent
tutaka	tour of inspection, of village, planting lands.
ua pou	village meeting, usually after church to sing hymns and discuss gospel, particularly its meaning in everyday life.
ui	cultivated yam (Discorea alata)
uipaanga	a group of persons meeting to discuss something, e.g. a meeting of a kopu tangata to discuss land division
umu	a ground oven where food is cooked on pre-heated stones
umukai	feast with traditional food at a special occasion
vaka	traditionally a tribe and its district, now applies mainly to district

Notes:
1) Some words and terms used once and explained in the text are not included in this glossary.
2) Savage (1962), while sometimes outdated, is a useful dictionary source.
3) Botanical names follow Claude Jardin's Kulu, Kuru, Uru: Lexicon of names of food plants in the South Pacific. Information Document No. 35, South Pacific Commission, Noumea, New Caledonia (1974).

ABSTRACT

The Cook Islands are increasingly dependent on external aid, finance, technology and employment opportunities. Agricultural production, mainly for export, has failed as the mainstay of the economy, and many people have emigrated from rural areas. There is a history of rapid cultural change, which has increased as the Islands have become more dependent on New Zealand and other metropolitan centres. To analyse these changes, in the vital area of agricultural development, I have discussed theories of cultural adaptation and used case studies which involved both qualitative and quantitative research methods.

International stratification appears to cause ecological instability in peripheral societies. Crop energetics illustrate the implications of change from traditional food crops to export/processing crops. Environmental degradation includes nutritional problems and decline of valuable wet-land resources. Further rapid change will accentuate social disorganisation, with special implications for land tenure.

'Small-scale' social organisation is unsuited to plantation crops. New rural organisations include cooperatives and growers' associations. When planned from the 'top down', however, they have not been successful at servicing crops and marketing, tasks previously undertaken by the state. Agricultural entrepreneurs have demonstrated initiative in forming independent organisations, and they act individually as brokers between the village-family system and the business-administrative system.

Rural aid should repair both metropolitan-periphery and local inequalities, but socially-inappropriate projects have often eventuated, and the basic fact is neglected that technological change cannot occur or endure without changes to the whole of a rural system. The difficulties in maintaining growers' interest in export crops, and failures to provide satisfactory rural infrastructure, are discussed. Planning must be more closely related to local (Maori) values.

The Rural Systems Approach is a suggested means for reorienting planning towards the goals of the farmer, farm family and rural community, so that change is controlled by the people affected. Self reliance in domestic food production is suggested as an example for autonomous development.

PREFACE

The research leading to this dissertation began during 1976 with background work and the writing of research proposals. In addition to extensive reading, discussions were held with over twenty people in New Zealand who had been involved with scientific programmes and aid projects in the Cook Islands and other Pacific countries. Particular interest and support came from members of the NZ Soil Bureau, who have been widely involved in Pacific agriculture and could see many difficulties arising in the implementation of development programmes.

From a general interest in the social implications of technological transfers, these discussions led me to concentrate on the processes whereby new agricultural technology is developed and implemented, and to the Cook Islands as a suitable case study. Preliminary discussions were held with New Zealand's Ministry of Foreign Affairs on the necessity for research into the social aspects of agricultural development programmes in the Pacific. A final research design was submitted to them in August, 1977. Full support for the project was given by the Cook Island Government and the research was subsequently approved for funding under the Regional Aid Programme. Field work began in October that year, as explained in the text.

Before proceeding with the dissertation which arose from this research, I will briefly mention two important concerns that have arisen. The first concern is the role of a metropolitan researcher, such as myself, in studies of 'development' in Pacific and other peripheral societies. It is my opinion that there can be considerable benefit, other than the personal advancement of yet another metropolitan-based student, in having an aid agency fund research on the social-impact of its programmes. These aid programmes have important social ramifications, especially in agriculture where there can be widespread change to rural systems, and these changes are primary topics in my dissertation. Also, New Zealand, as a metropolitan centre, plays an integral role in the South Pacific. This role, especially with respect to rural change in the Cook Islands, is also analysed in this research project.

Metropolitan-based researchers must help to analyse the role of the centre in promoting development, or under development. Insufficient work is being conducted on these subjects and insufficient research information is being communicated to metropolitan policy and decision makers. Obviously, this is not to deny that Island researchers must also contribute to this analysis and any subsequent debate. That academic opportunities, research funds and other incentives for their conducting research are inadequate, is undeniably part of existing stratification, and needs both recognition and action. Nevertheless, I hope that my own studies and conclusions will add to current analysis of Pacific development and promote avenues for constructive future research: research by both the metropole and periphery. In this regard I have made a special personal effort both to convey my findings to those who formulate development policies for the Cook Islands, and also to encourage local people to study, and conduct research.

A further, sometimes parallel, concern that I have tried to accommodate in my study is that research information is often reported in a form that is unavailable or unsuitable to both the funding agency and the researched population. Academic tomes are often inaccessible, either because they are too expensive to reproduce or too easily 'lost', or otherwise, they are indigestable to all but a small élite. In addition, academic writing does not usually allow room for conclusions and statements which lead to improved 'policies' in the 'communities' involved. With this in mind, I agreed, in accepting a research contract for this study, to produce at least one report which could be circulated to the Cook Islands Government and agencies, and to New Zealand Government departments who expressed interest in the work (see Taylor, 1980). While this report contains much material repeated or expanded in this dissertation, it adds suggestions with respect to specific policies which arise from the research.

In considering problems of theory, I have kept in mind the many limitations of social inquiry and the need to open that inquiry to a more humanistic approach. New theories of 'development' must do much more than fit neatly into current paradigms of a science dominated by Western thought, institutions and personnel. Moles (1977), for example, has raised important issues concerning the limitations of

social science in studying behaviour and producing research results that are utilitarian. He points out that social scientists form a subculture of Western scientific philosophy and, as with any cultural group, their inquiry is limited by culturally-defined knowledge or reality. Western economic 'rationality' and technological strategies have often been used in the imposition of a limited perception on the opportunities and choices available in other cultures.

There is an urgent need for theories that are multi-cultural and multidisciplinary, allow for integration with other scientific work, and provide cross-cultural understanding. Also, there is a need for more utilitarian approaches: ones that will facilitate useful communication between social scientists and development planners, politicians and community leaders, and the many people actively involved with communities in areas of rapid cultural change. Planning of rural change requires sophisticated technical methods and must operate within a broad definition and understanding of human ecology. We need eloquent solutions to complex problems, not simplistic 'solutions' and complex results. Above all, economic and scientific rationality need to be balanced by human-oriented community development and social action.

Methodology must receive careful attention. The pragmatic contributions of the biological and technical sciences, and social sciences such as economics and demography, must be meshed with qualitative research. The onus is on both sides to contribute, but the applied anthropologist/rural sociologist is in a particularly useful position to advance this more integrated effort.

A balance has to be struck between the lengthy ethnographic descriptions common to social anthropology (thick description) and quick-fire surveys carried out on specific problems (often by consultants to international agencies). Decision makers may demand quick research results, yet thorough research is required to avoid past mistakes where only scant attention has been paid to the cultural background of projects. 'Thick' description (emic methodology) is required to maintain close rapport with and understanding of the group being studied. Yet empirical techniques (etic considerations) must be employed to meet cross-cultural and inter-disciplinary requirements.

To summarise, throughout this research programme, and preparatory work, I have concentrated my attention on the following problems:

a) The need to 'integrate' social-scientific work both within itself and also with the physical, biological and technical sciences.

b) The need within social theory to reconsider urgently man-environment relationships and adaptation, or maladaptation, between cultural groups and their environments.

c) The need for research to be more closely involved with community action and analysis of contemporary social problems such as inequality.

d) The need to convey research information to the research population and to the decision-making processes that affect that population.

e) The need to recognise, in a cross-cultural study, the position of the researcher in relation to the social and economic conditions of respective groups, and to question any imbalances which exist in research efforts by all groups concerned.

f) The need to recognise in methodology that qualitative data are at least as important as quantitative data.

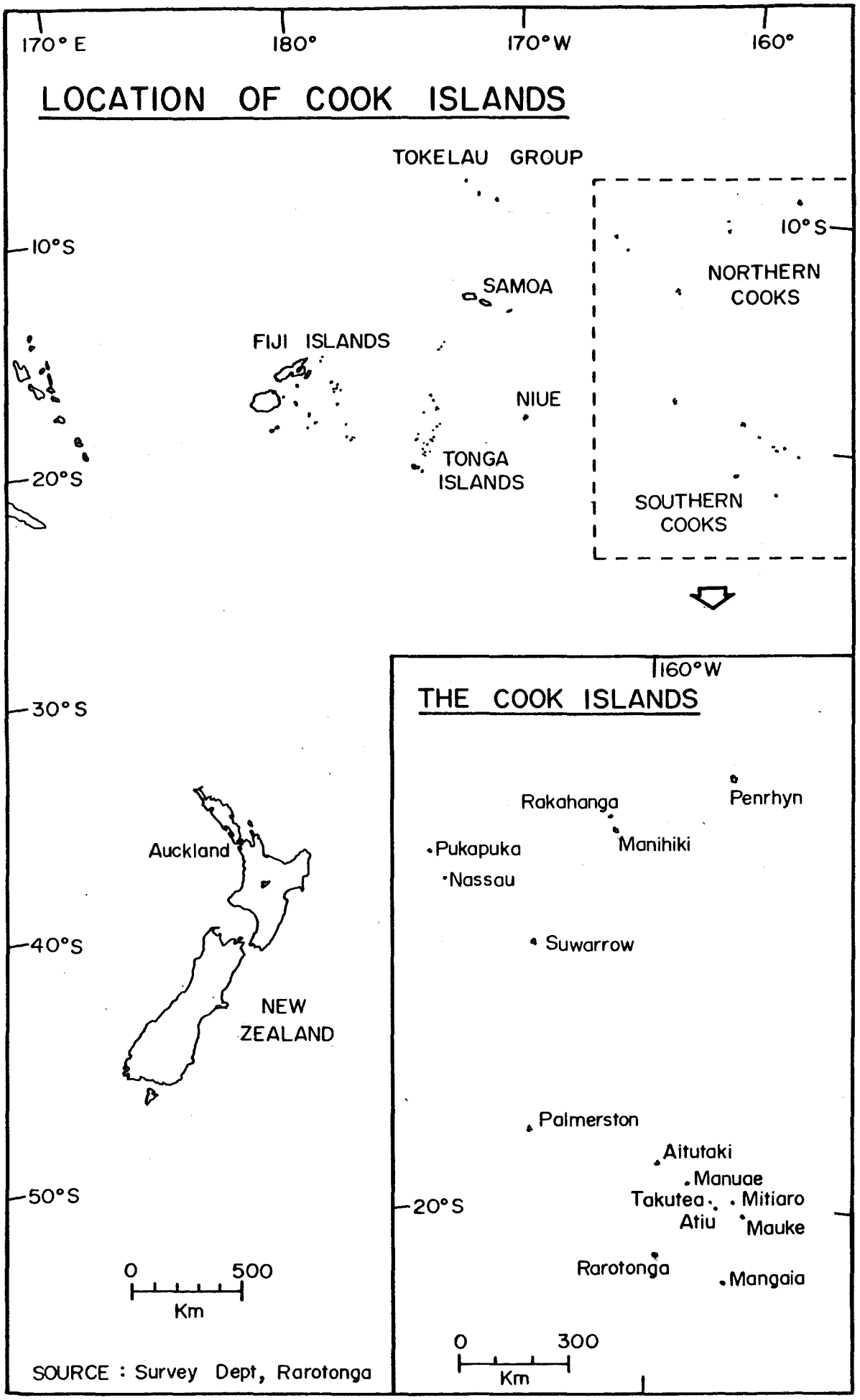
Now I have the pleasure of expressing my gratitude to many people who have assisted in my research and writing. Friends and university colleagues have given invaluable advice and support. Professor W.E. Willmott has provided supervision, encouragement and many lessons in editing and writing throughout my studies. Dr. Arnold Parr helped with supervision and I thank him and the rest of the Department of Sociology. Dr. Malcolm Blackie gave useful advice in the early stages, and Dr. Stephen Goldson, Mr. Philip Sommerville and Mr. Murray Horn all added friendship and many useful comments. My thanks also to Dr. Jo Baddeley, Dr. Richard Bedford, Mr. Graham Tait and Mr. Trevor Trought for their comments on manuscripts.

Also, I thank members of NZ Ministry of Foreign Affairs, both in Wellington and the New Zealand Office in Rarotonga, for their ready assistance. In addition, members of NZ DSIR, especially Dr. Millar and the Soil Bureau,and also members of NZ Ministry of Agriculture, all helped in many ways.

In the Cook Islands, many people cooperated during my research, providing information, and proffering a variety of opinions and hospitality. I wish to thank them all, especially Mr. Kato Tama and Mr. Manea Turepu the two secretaries for Agriculture, all members of that Ministry particularly the Agricultural Planning Unit, and outer-island offices, Chief Administration Officers and other members of government departments: too many to name, but thanked nonetheless. To all the growers, I can only dedicate this dissertation.

It is difficult to find words to adequately thank Cilla Taylor. Assistance with field work, compilation of endless data, 'logistical' support, editing, companionship, and disruption of her own career cannot be properly described here. I gratefully acknowledge her contribution and the support of all my family.

Mrs. Liz Dobson typed this text, and much more, with cheerful enthusiasm, speed and skill. To her, and those I have missed, many thanks. As always, all opinions, inadequacies and omissions remain my responsibility.


170° E
180°
170° W
160°
LOCATION OF COOK ISLANDS
TOKELAU GROUP
10° S
NORTHERN COOKS
SAMOA
FIJI ISLANDS
NIUE
TONGA ISLANDS
20° S
SOUTHERN COOKS
160° W
THE COOK ISLANDS
30° S
Rakahanga
Penrhyn
Manihiki
Pukapuka
Nassau
Auckland
40° S
Suwarrow
NEW ZEALAND
Palmerston
Aitutaki
Manuae
Takutea
Mitiaro
Atiu
Mauke
50° S
20° S
Rarotonga
Mangaia
0 500
Km
0 300
Km
SOURCE : Survey Dept, Rarotonga

CHAPTER ONE

THEORY AND RESEARCH METHODS

In this chapter I consider some of the problems involved in forming a suitable theory and methodology for applied social-science studies of development. My emphasis is placed on issues of social and environmental change, and the role of so-called development programmes in these changes. In section 1.1, I review theoretical issues and their influence on writers in the areas of applied anthropology and rural sociology, particularly with regard to 'development' in the South Pacific area. In section 1.2, I discuss essential questions of cultural adaptation and propose a central thesis regarding cultural and environmental change and international stratification. Social disorganisation is a complement of inappropriate technology. Therefore, new approaches for developing technology within stable rural systems are examined in section 1.3. Research methods are discussed in section 1.4, and a preamble to the rest of the text is provided in section 1.5.

1.1 Towards an Applied Anthropology of Development

Approaches to 'development', and particularly to 'rural development', are the main focus for theoretical parts of this dissertation. Most particularly, approaches are sought that might be most useful in the cultural-environmental context of the Pacific. Using the term 'paradigm' to describe the 'world view' of a social scientist, including the theories, philosophies and attitudes with which he interprets his environment and society, I will look first at the emergence of a paradigm that is applicable to studies of Pacific development. Pacific studies might in turn be a subset of any new Third World paradigm.

'Development' is a concept that has become the focus of 'applied' social scientists. These specialists include rural sociologists, applied anthropologists and development economists, and there is often

overlap between their work. Considerable effort has been made by many authors from these disciplines to understand what happens during 'development' processes. But so far the results of this thinking are inconclusive and little consensus has emerged, especially in the form of any disciplined paradigm.

Many writers do agree, however, that 'rural development', has often been a failure. Criticism of rural development has revolved around the failure of agricultural changes (particularly the Green Revolution), to achieve aims such as rises in food production per capita in less developed countries. Population has steadily increased. The transfer of resources (and capital) to developing countries has declined and disparities of wealth between rich and 'poor' countries, and within them, have increased.

In early development theories, anthropologists recognised the complexity of directed social change (e.g. Goodenough, 1963). As major social changes occurred under the general guise of 'development' however, existing theories and policies could no longer cope with the issues that were arising. This was particularly so in economic theory, as economic development is central to many advocates of development. Economists, such as Dorner (1971) and Hewes (1974), began to criticise the prevailing lack of attention given to questions regarding the distribution of power and income. Development programmes that are heavily oriented towards increasing overall production, particularly of cash-crop exports, were seen to be widening income disparities, encouraging emigration from rural areas, and not necessarily increasing job opportunities. As Hewes (1974:37) said:

> In Western terms development often means increased physical production. But when increased output is accompanied by intensification of poverty, loss of income, unemployment, and increased insecurity for large numbers of people, a different analytical model is needed.

In the 1970's, development economists became increasingly aware of the need for new approaches, and dependency theory is one major new perspective provided by them. In this theory, commercial agriculture in the developing country is viewed as part of a capitalistic and

increasingly monopolistic system involving factors such as finance, supply, processing, transport and marketing. This economic system can include metropolitan - periphery dependency; illustrated in this thesis by the relationship between New Zealand and the Cook Islands. Dependency theory (discussed in more detail in section 2.1) explains how capitalistic economic organisation, based in metropolitan countries, exploits peripheral economies for resources such as raw materials, labour, environmental quality and military bases. At the same time, the peripheral economy is altered to a state where it becomes heavily dependent on imported processed products, such as fuel, food and expertise. Further exploitation and inequality is encouraged by the development of centralism and a new political/economic élite in the peripheral country. Conflict between this elite and the associated new proletariat is the seemingly inevitable result of the inherent inequalities of the whole process.

One problem with dependency theory is that it is never entirely clear who is dependent on whom, especially in view of the worldwide competition for resources that arose during the 1970's. In fact, 'dependency' is understood best through a theory of international stratification. While stratification implies inequality and conflict, it also implies mutual interdependence and the consequent vulnerability or instability of any elite group. It is from this perspective of international stratification and consequent social disorganisation that I will examine the Cook Islands in later chapters. An outline of Cook Island-metropolitan relationships on a 'macro' scale are contained in chapter two, but the implications on a 'local' scale are found throughout this dissertation.

The importance that is now often placed on the historical complexity of development processes is an important contribution from the dependency-economic school of thought to sociological theory. Previous theories of 'dualism' and 'modernisation' did not explain adequately the changes which occur when complex world economic processes are combined with the details of cultural change within any particular cultural group. Sociologists such as Pitt (1976) have recognised that development situations are complex and dynamic. Useful explanations of any one situation need to be flexible and tend to be

multi-disciplinary and philosophically open. Poor planning can result from neglect of either social or economic factors and it is a basic premise of my approach that economic and social analysis are both vital to good development planning.

Stereotyped 'models' of development, including those expounded by sociologists, tend to reflect highly ethnocentric concepts of capital, labour, income, health, education and production. Frequently, traditional society has not been regarded as a suitable base for development, therefore social change has been a prerequisite to the inception and success of many programmes. When planners have tried to build on traditional social forms such as 'communalism', they tend to have mis-interpreted so-called 'traditional' practices. The solutions proposed as a result of this ethnocentric thinking - such as cooperatives (Pitt, 1976:34) - have frequently failed.

Whose idea is 'development'? Often a Cook Islander will conceive of himself as 'underdeveloped' to a Papaa in terms of Papaa culture: "We are not like you - we do not have your wealth, goods, etc." A Cook Islander will often express surprise, even confusion, if a Papaa behaves in a way that is considered 'appropriate', even on simple things such as food or manners, and particularly with Maori language and knowledge of behaviour and environment. The Maori conception of Papaa culture distinguishes many of those changes that the Papaa regards as 'development' as being changes towards the Papaa way. If 'development' is defined as social and economic 'advance' in a community, then it can be defined best only by members of that community. Therefore, there is often self delusion inherent in the stereo-typed models used by metropolitan developers, aid agencies, and academics. Many existing concepts and relationships need to be examined.

What, for example, is the nature of the relationships between the international agencies and the local administrative, political, economic, and academic élite with whom the aid agencies generally deal? Despite the emphasis placed by many authors on the dominant influence of external decision-making, the local élite usually have a great deal of influence with regard to the allocation of funds, selection of experts and delineation of projects. This allocation of funds, can be

used to support a political candidate on his home island, making the direction of the aid decidedly political. On the other hand, internalised self interest in the bureaucratic aid organisations can lead to reports and plans that are bound by numerous institutional constraints, and are not open to the inherent complexity of development situations.

The possible aggravation of social conflicts is usually not considered in the preparation or study of development objectives. In fact, it is more commonly thought that development plans are diminishing or solving existing conflicts. As Galeski (1976:160) stated:

> I said before that all programs of development should be seen in the light of social conflicts: the struggle for political power. It is obvious that every group in power will judge any program of development from their perspective - will the program strengthen their power, enlarge the social basis or social support for the group in power, or on the contrary, would it be dangerous for the governing group?

An entrenched élite have their particular perspective on any programme. On the other hand, any 'underprivileged' group will have another view as to how that programme might strengthen their position and undermine that of the government, or vice versa. As Galeski concluded:

> The attitude of different social groups towards programs of development will, therefore, be determined, not so much by its abstract "economic" rationality, but rather by the existing conflicts between privileged and under-privileged groups.
>
> (ibid.:160)

Research on agricultural development has inevitably led me to turn some attention towards the processes whereby 'aid' policies are formed. Established administrative policies often reflect limited cultural views. However, as Willner (1978:3) points out, the cultural outlook of policy-makers has received little anthropological scrutiny. Anthropologists - most originally from colonial cultures - have advised governments about the problems of colonial administration, but analysis of their government's policies has been left to political scientists and economists. There are constraints on

publication by anthropologists about the policies of development programmes in which they have been involved. Protection of future employment opportunities and political outlook are two such constraints, either of which could be disguised as 'ethical' considerations. On her experience as an 'applied anthropologist'. Willner (1978:3) stated:

> Wherever I worked, public policy was largely decided on the basis of political pressures, ideology and administrative procedures and sources of information. Rigorous knowledge could threaten both established accommodations within an organisation to the existing distribution of power and manouverings to change it.

Recognising that policy-makers are forming judgments based on limited personal perspectives, which include inadequate research information on either this perspective or the group to whom the policy will be applied, one wonders what influence an anthropologist can have on decision making. Personal persuasion by anthropologists who know policy-makers may be one approach. Anthropological training for policy-makers could be another. A few anthropologists clearly have considerable access to some politicians and policy-makers. For example, Crocombe (1977b) quoted two Pacific Island heads of state as personal sources of information.

In academic institutions, predominant attention tends to be given to activities which support that particular institution rather than wider ideals.

> There is a difference between anthropologists as politicians or bureaucrats applying anthropology to national goals and anthropologists influencing public policies that favour the development of anthropology (Willner, 1978:3).

It is probably safest to conclude that we are all, whether politician, bureaucrat, professor, student or rural poor, undeniably motivated by a degree of self interest. Those people who are motivated to form policy for others must be able to pursue and sustain some self examination. By examining their own self interest, anybody who is 'doing good' can do better. This requirement for self examination will add perspective to the anthropology of aid and public policy, and to the anthropology of anthropology.

Looking at an emerging Pacific perspective on development research, it is apparent that a more critical approach is being followed, particularly with respect to aid programmes. Authors are criticising dependency and advocating involvement and a more activist stance for social scientists from the Pacific. Samy, for example, presents a clear picture of the octopus-like multi-national corporations which, from early colonisation, have gained extensive economic control in the region. He said:

> Fiji's long-term dependency on imports and private foreign capital has been a direct result of and an integral part of this wider process. Patterns of tastes, technology, socio-political organisation, attitudes to time and work, as well as how the bundle of goods are shared have been, and continue to be, determined primarily by these outside forces.
>
> (Samy, 1978:29)

Samy then argued that recent social and scientific research in the South Pacific has been excessively "economistic" through predominant funding and pursuit by foreign, capitalistic and neo-colonial sources. "Economistic" research has concentrated on the 'traditional' and behavioural constraints to production. Consequently, plans involving continued reliance on foreign investment and technology are widely advanced in research reports.

Samy maintained that "economistic" research is based on positivistic theories and methods. His call for theories to explain historical processes of dependency and conflict, supported by action-orientated and politically motivated research, parallels the theoretical trends that have occurred widely in Western social science. Samy (1978:30) concluded that:

> We need, amongst other things, a relevant social science with appropriate analytical tools in order to articulate and transform 'the Pacific way' into a reality in this rapidly changing and shrinking world. Quite clearly this is a task not for any one single person, academic or discipline, and least if at all, for foreign social scientists.

But it is debatable whether 'the Pacific way' constitutes a completely satisfactory basis for a new development paradigm for the Pacific. 'The Pacific way' is a concept upheld by academics and

members of small, foreign-trained intellectual and political élites. Most of the philosophy seems to lie in the Western-dominated educational background of the proponents. The main trends, whieh are also discernable in 'radical' Western sociology, are:

a) A move towards more socialistic, humanistic and anti-technocratic viewpoints.
b) A concentration on dependency theories as an explanation for complex 'development' processes.
c) A move from positivist (empirical) research to research that is more subjective and participant-oriented, emphasising involvement in issues.

Recent research by Pacific Islanders has been increasingly critical of existing political systems. For example, Tapuelelu (1978:176) called for research into political-economic systems in Tonga. He says that "unless the core problem of economic development is pulled out, all research for development will be like collecting shellfish into an open-bottomed basket!" Tapuelelu points out that research in Tonga to date, carried out mainly by outside researchers, has tended to avoid political-economic issues and to uphold the status quo. Mamak and McCall (1978:7) and Ravuvu (1978:73) take up this theme. They emphasise that researchers must identify more closely with the needs and interests of research populations, especially disadvantaged groups, and maintain a more activist stance.

Two important questions arise from the writings of Pacific Islanders and a consideration of the role of metropolitan-based researchers in development research. The first question is whether western sociological approaches can help explain development in less industrialised societies. The second is whether research into development should generate policies which achieve greater responsibility to the people who are the subject of the research. I contend that the answer to both these questions can be positive. Given current trends in theory and method, including long-standing influences from all the cultures that have been studied, many social scientists can provide a useful perspective on the complexity of cultural change. Their usefulness should be enhanced by close examination of the narrow

cultural perspectives of social scientists themselves. Also, fresh approaches to research are needed for more than esoteric reasons and will not be found in the narrow view of any single group. 'Development' is an international, interdependent problem. Therefore,

> Widespread cooperation and the combined efforts of specialists from both within and outside the region are required to plan, coordinate, and carry out development research in the light of national and international goals and the wishes of the local people.
>
> (Mamak and McCall, 1978:2)

This cooperation and effort requires adequate numbers of social scientists, not only from within the region, but also committed to work and involvement with the important issues of their own people. As Hau'ofa (1975) and Crocombe (1977a) have indicated, this is not the case. Further training needs to be an urgent concern of both the Island and metropolitan centres of the Pacific area.

Bishop Finau's (1978:18) concluding remarks to his address at the 1976 Young Nations Conference in Sydney provide a suitable ending for this section:

> Let us admit that we are still, perhaps unconsciously, too paternalistic. Perhaps local experts are too sensitive to expatriate-seeming arrogance. In the Pacific situation both have a complementary role. It can be balancing to see how others see us. Let us listen and learn from one another. The best research and planning for development may be yet to come; a development out of the developing Pacific that is both human and Christian in its consideration for the peoples of the Pacific and their Pacific way of life.

1.2 Analysis of Cultural-Environmental Instability

Experience gained from the introduction of new crops to the Cook Islands clearly demonstrates that more attention must be given to the full implications of introduced technology. To this effect, many authors have already questioned the appropriateness of existing and planned technological strategies in developing countries. We require strategies that have an acceptable impact on any environment and society where they are fostered.

Concern about technology is part of a new sociological orientation towards the importance of relationships between culture and environment. Catton and Dunlop (1978) for example, proposed a "New Environmental Paradigm" in which man-environment relationships take precedence in the understanding of human behaviour. I will follow this argument in my thesis.

First, I will emphasise that, in my usage, the term 'system' refers to sets of inter-relationships which are reciprocal. In any discussion of human ecosystems, the reciprocal relationships between a culture and its biological/physical environment must be recognised. I will use the term 'cultural habitat' to describe the area of primary interaction between a culture and its physical/biological environment.

Cultural habitats can be defined only by accounting for a cultural group's perception of their environment. Anthropologists have studied this perception in ethnographies and especially in the work of ethnoscience (Sturtevant, 1964), and cognitive anthropology (Tyler, 1969). Godelier (1978) discussed cultural 'knowledge' of environments using the useful term "idéelle realities": the 'intellectual "means of acting upon nature".

Within a cultural habitat, a group will perceive their environment as being useful - or useless! We all perceive some usefulness from our environment, and this use implies modification. Modification of a cultural habitat means that environmental components, and therefore stimuli, must be altered. New stimuli bring perceptual, and consequently cultural, change. In cultural systems, there is continual interaction and constant change. Adaptation therefore describes the continual changes taking place when a cultural group interacts with its environment (in an area which can be defined as a cultural habitat).

Using this concept of cultural adaptation, there is no need to settle for either cultural evolution or environmental determinism. Instead, one can talk about cultural stability or instability, or the rate of change in a cultural system. An unstable cultural system - one where there is both rapid cultural and environmental change - implies that there must also be social disorganisation, and foremost, changes in the social and economic relationships of primary production.

The concept of continual cultural adaptation provides a broader base for understanding cultural change than any theory of cultural evolution. Social (in fact cultural) change has been explained by many writers - such as Marx, Spencer, Steward and Sahlins - in terms of cultural 'development' or evolution. Cultural evolution has been seen primarily as a means by which a society can be freed from the restrictions of its habitat. But evolution is a concept of Western scientific philosophy. The processes which led to the 'development' of industrialised societies, both capitalist and socialist, have been viewed as 'evolution' by many scientists, supporting a mythology of progress within industrial societies.

Perhaps ironically, and almost inevitably, Western science has provided cultural ecologists with methods by which they can quantify better the degree of efficiency by which an industrialised culture modifies its environment. Measurement, or quantification, of 'development' has traditionally been an area for economic analysis. But the recent influence of biological/ecological research and the concepts of ecosystem dynamics have brought the use of energy analysis into the range of parameters used by cultural ecologists. Energy analysis reveals that there is a definite possibility of cultural maladaptation through rapid and destructive environmental, and consequently cultural, change. This analysis is concerned with the use of the resource that is currently the subject of major world competition: fossil-derived energy. Cultural 'evolution' to a technology that is based on the use of fossil fuels, has many implications for the 'functional autonomy' of any society.

Bayliss-Smith (1977) has summarised some of the theoretical and research developments associated with the analysis of energy use, energy efficiency and cultural 'development'. He discussed the need to study flows of energy along with flows of information and matter, and concluded that:

> If we wish to assess the degree of dependence of an island economy upon the outside world, or in other words the extent to which the island has lost its functional autonomy, then we must have some unit of measurement which will tell us how much interaction there is within the island compared to how much exists between the island and the outside world.
>
> (Bayliss-Smith, 1977:17)

'Functional autonomy' can therefore be usefully analysed by studies of energy flows and distribution of energy resources, and by an exmination of 'autonomy' at individual, community and national levels. 'Autonomy' and 'self-reliance' are closely related. They require control by any group over the direction of the cultural and environmental change that they experience.

White (1943) originally brought questions of energy use and evolution to the attention of cultural anthropologists. More recently, Rappaport (1967) provided comprehensive studies of energy systems and cultural adaptation. White considered that cultural systems have three main components: technological, sociological and ideological subsystems (1943:319, 1975:17). White (1943:338) postulated a "law of cultural evolution" i.e.:

> Culture develops when the amount of energy harvested by man per capita per year is increased; or as the efficiency of the technological means of putting this energy to work is increased; or, as both factors are simultaneously increased.

White therefore concluded that "other things being equal, culture evolves as the productivity of human labour increases" (1943:346).

Through the evolutionary model which sees Western society as the ultimate in cultural and technological development, the basic premise was developed by White (summarised by Bayliss-Smith, 1977:319) that:

$$E \times T \longrightarrow C$$

where (E) is energy harvested per capita, T represents technological methods and (C) is cultural development. Huge increases gained in per capita agricultural production through industrialisation have been upheld as evidence of technological efficiency and cultural development. Consequently, agricultural development has been based widely on the need to industrialise production and increase output per capita. 'Green Revolution' became the aim of many supposedly undeveloped countries. Then the 'energy crisis' of the 1970's brought a dramatic realisation that fossil fuels are a diminishing resource, and that the costs of energy as a factor of production have been rising faster than other costs such as labour. There has been a realisation that:

> Modern methods of intensive farming have generated what Odum describes as a 'cruel illusion' since the scale of the energy subsidies required to raise yields has not been appreciated...
>
> The productive but inefficient systems of food production of industrial man contrast with the more stable and self-sufficient systems of the pre-industrialised world.
>
> (Bayliss-Smith, 1977:326)

The new concept of inefficiency in industrialised agriculture is one of energy inefficiency. This has been clearly illustrated by Leach (1975), who placed different agricultural systems on a scale according to their ratios of energy efficiency. A ratio of energy efficiency is obtained by dividing the calorific output of a crop by the total energy costs, including all the energy inputs required to manufacture chemicals, provide machinery, produce fuel, operate machinery, etc.

$$\text{Energy Efficiency (Er)} = \frac{\text{Energy Output}}{\text{Energy Input}}$$

Leach (1975) has demonstrated that in terms of energy, tropical subsistence farming is usually several times more efficient than industrialised agriculture (see section 8.2).

Now the position of a society based on an industrialised agricultural system can be reconsidered. While that society may have progressed - especially in the eyes of its scientists - to a social and technical system that is apparently highly developed, this development may be no more than a socially-conceived illusion. The complex of industrialised technology and social relationships has not always been regarded as a utopia by social scientists, but few have attributed more than romantic qualities to non-industrialised systems. Energy analysis of any group's exploitation of their environment, both in agriculture and other primary production, allows a very useful evaluation and comparison of agricultural systems. For many industrialised crops, (Er) has a value of less than one. The immediate implication of such a value for (Er) is cultural entropy, where no <u>amount</u> of technology (based on the use of fossil fuels) can improve the situation. But the <u>quality</u> of technology can alter the value of the energy-efficiency ratio. The longer-term viability of a society, and its levels of autonomy, can now be gauged more realistically.

In the short term, entropic Western societies have continued to 'grow', particularly in the metropolitan centres, by exploitation of 'ghost acreages' on the periphery. As Catton has explained, we have learnt in metropolitan countries, to live off "phantom carrying capacity".

> It is high time, therefore, that we learn to see 'development' as a Faustian bargain. As a temporary result of acquiring the ability to draw down the earth's finite stocks of stored Carboniferous energy, developed nations have been able to support growing populations at rising levels of affluence.
>
> (Catton,1980:16)

In the light of these ideas about cultural change and environmental degradation, social scientists must place emphasis on a new review of the ways by which social systems distribute resources. Catton (1979) has reviewed stratification theories, such as structural functionalism and class analysis, from an ecological perspective. Following Catton's argument, structural-functional theories of stratification found sustenance in a New World era of resource abundance; whereas conflict theories were conceived in a European arena of limited resources and continual struggles for power. Metropolitan countries, originally in Europe and later in North America, have traditionally filled extra resource demands by exploiting a "ghost acreage" in peripheral countries. At the same time 'development' in the peripheral countries has been encouraged under the assumption that there is an adequate resource base for everybody. Catton (1979) has argued that resources are finite. Therefore future international stratification and conflict will be primarily concerned with the unequal distribution of resources.

The present situation in the Pacific Islands can be seen in terms of increasing stratification between the metropolitan centres and peripheral islands. The main metropolitan centres have been New Zealand, Australia, France and the United States. There is also increasing internal stratification. Centres such as Suva are becoming dominant in the region and single islands dominate in each group.

With international stratification, metropolitan societies have transferred many of the environmentally unsound apsects of their technology to 'developing' societies. In addition to economic costs and benefits, people on the periphery may be 'worse off' environmentally. Or, in economic terms, inefficient technology can have a high 'social cost'. Through the move from subsistence to cash cropping, the people in the Cook Islands are experiencing environmental instability, with an increasingly unstable cultural habitat. The most important correlate of habitat instability is cultural instability. Cultural instability results in rapid cultural change and inevitable social conflict. This conflict does not refer only to class differentiation, but also to cultural conflicts due to generation differences, family disputes and personal (psychological) conflicts. These changes, and associated social disorganisation, will be illustrated throughout this dissertation.

The identification and analysis of rapid cultural change also helps to explain why it is possible for more than one mode of production to operate in a society. At a time of wide social disorganisation and change an individual or group may operate in two different economic (and cultural) contexts. Legros discussed how one society can include more than one mode of production. He stated:

> In other words within a given society, there may exist (and as a matter of fact do exist) not simply several exploitative techniques (that is self evident),but several distinct modes of production with their respective economic bases, ideological superstructures, and juridical and political superstructures.
>
> (Legros, 1977:29)

A new mode of economic and social organisation, with new cultural perceptions, can be transferred from metropole to periphery. Individuals can, and do, operate in two cultural contexts (Maori and Papaa) and this is an important aspect of cultural change in the Cook Islands (as examined in chapter three), and new economic organisation, especially entrepreneurship (see chapter five).

In summary, there is at present increasing stratification between metropole and periphery, and within the peripheral societies. Technology, industrial products and finance are moving from metropole to periphery. Labour, raw products and increasing amounts of

'processed' resources move in the opposite direction. New forms of social organisation also move to the periphery, and, an important overall consequence of present stratification is the transfer of environmental degradation and ecological inefficiency from metropole to periphery. Attempts to repair metropolitan/periphery economic imbalance through aid programmes, assessed primarily on economic criteria, have minimised and frequently disregarded the importance of both environmental and social changes. This thesis has emerged from my analysis of agricultural change in the Cook Islands.

1.3 The Rural Systems Approach

If one accepts that existing technological strategies are inadequate in social terms, then new approaches are required. I propose that less centralised methods of planning be considered. In other words, how can people assume more responsibility for their own priorities and actions to allow a more autonomous development of their own community and resources? Further change is inevitable. But this change must be controlled in order to reduce social disorganisation. While economic dependency leads to cultural instability and social disorganisation, then in future, national and community policies which lead to greater economic self reliance should be more closely examined. Greater economic self reliance is a major objective of the Rural Systems Approach to agricultural development which I outline in this section.

'Integrated rural development' is one general approach that has been proposed as an answer to the many problems of rural planning. This new stratagem has been closely linked to a review of technology, and the cross-cultural transfer of technology. Hence 'integrated rural development' has joined 'appropriate technology' as a catch-cry among development personnel and theorists. As a result, one wonders whether the practical realities of directed change have not been swamped in a mass of words and incoherent theory. For example, Leupolt (1977) discussed the potential of "Integrated Rural Development". His approach concentrates on two themes: the fostering of a "New Economic Order", which is seen to increase the flow of resources to developing countries, and the fostering of "self reliance".

> The concept of self-reliance means, according to a Chinese translation, "Regeneration through our own efforts". It means creating an internal autonomous system of mutually reinforcing inter-relationships, which is carried forward by motivated people, inspired to mobilise local resources, and where everybody in the community has to play his role, fully participating in decision-making, actions and benefits.
>
> (Leupolt, 1977:8)

A plethora of words, and allusions to poorly understood national development models in such countries as North Korea and Tanzania, help to emphasise that it is probably impossible to try to prepare any useful, single model of development. But, as a new somewhat nebulous approach, integrated rural development contains important concepts. Particular emphasis is placed on the development and mobilisation of people and communities in the search for ways to achieve more equitable distribution of resources and incomes. More specific methods, however, are required to develop technologies appropriate to a variety of rural systems.

While mindful of the risks in adding verbiage to rural-development theory, I believe that Rural Systems Approach (RSA) is a useful term for summarising my own and other recent academic thinking aimed towards a more satisfactory approach.

Rural - A non-metropolitan area of social development which includes the social organisation, settlement, rural infrastructure, etc. that surround agricultural activity.

Systems - An emphasis on the importance of both cultural and environmental factors, gained best by the integration of multi-disciplinary and multi-cultural perspectives.

Approach - One of several different ways of looking at a situation.

The RSA (not to be confused with its more militaristic namesake) implies a vital concern with agricultural systems and is an extension of the Farming Systems Approach recently proposed by a number of authors (van Dusseldorp, 1977; Norman, 1978; Blackie et al., 1979). These authors have focused on the ecological and social impact of new agricultural technology. They have maintained that new technology

should be based on well established farming systems "within the constraints of local energy supplies, traditions, land tenure and labour patterns" (Blackie et al., 1979:3).

Proponents of the Farming Systems Approach have been especially critical of ad hoc transfers of technology. Blackie et al. (1979:7) consider that it is a "cruel hoax" to

> discard proven, if low-yielding, production systems for alternatives which are incomplete parts of another system and which cannot operate effectively in the long term without the full support of a sophisticated industrial infra-structure and high inputs of fossil energy.

Ad hoc approaches to technical change are a consequence of existing international stratification and must be treated more critically.

A comprehensive and realistic review of rural society is a prerequisite to any change planned in that society under the RSA. It is first necessary to avoid the trap of regarding existing rural systems as inherently stable. For example, Blackie et al. (1979:10) stated that: (my emphasis)

> The problem of effecting change in Western Samoa is particularly challenging since the country has a very stable rural culture, which has successfully resisted modern influence.

I suspect that this view of rural cultural stability may prove inaccurate in Western Samoa, and it certainly does not apply in the Cook Islands. After nearly two hundred years of increasing metropolitan-peripheral stratification, cultural and environmental instability are now likely to be endemic in South Pacific societies.

In the RSA, neo-colonial exploitation, paternalism, inappropriate technology, and 'top-down' planning are replaced by a 'bottom-up' philosophy. Or, as Pitt (1976:76) suggested, the "internal generation of development" in rural societies has been neglected. To achieve this elusive objective, the farmer himself must become pivotal in planning and research. His knowledge and experience can be seen as a valuable foundation for any necessary change. The farmer must be more closely involved with applied research that is designed to tackle biological

and technical constraints to rural production. Furthermore, he must be approached with a positive attitude towards building on existing cultural and technical forms.

This approach requires a re-orientation for much agricultural research. Experimental work (trials) should be conducted on the farmer's land, wherever possible, ensuring that the farmer is close to the research process.

> The role of the farmer is maximised and reality in the research process ensured by minimising work on experiment station fields and maximising it on farmer's fields.
>
> (Norman, 1978:815).

Social sciences can assist with this type of research, but require integration with the original agricultural research effort. Van Dusseldorp (1977:214) makes a strong case for increasing social-scientific research in agricultural research centres, where currently the ratio of sociologists and cultural anthropologists to other permanent research staff is less than 1 : 1000.

When social scientists are merely appended to research programmes to forecast the social and economic consequences of new technical developments, they have inadequate time for research and little hope of diverting administrative momentum. Top-down planning and often inappropriate extension and persuasion are the inevitable result. An alternative approach is to "steer" agricultural research (Van Dusseldorp, 1977) i.e. to help guide development with complementary analysis by social scientists. There may be, however, insufficient social data for steering technical developments from the early stages. But present proliferation of social and economic research on development issues could also imply either that the research is unsatisfactory or that there is administrative resistance to using the data provided. Paternalism, economism and political ideology can all influence the "steering approach".

An example of the "steering approach" applied to agricultural research is a Three-Phase Development Model, proposed at the Soil Science Conference in Suva (SPC, 1976b). In this Three-Phase Model,

a) Initial data collection is conducted in the agricultural and social sciences within a coordinated framework.

b) Research data are then applied in trails and extended to the farmers in advisory, educational and publicity programmes; seminars involving research scientists, extension officers and growers are held to coordinate and plan the application of the research.

c) Further extension and full application of research results should then increase production within a national development plan.

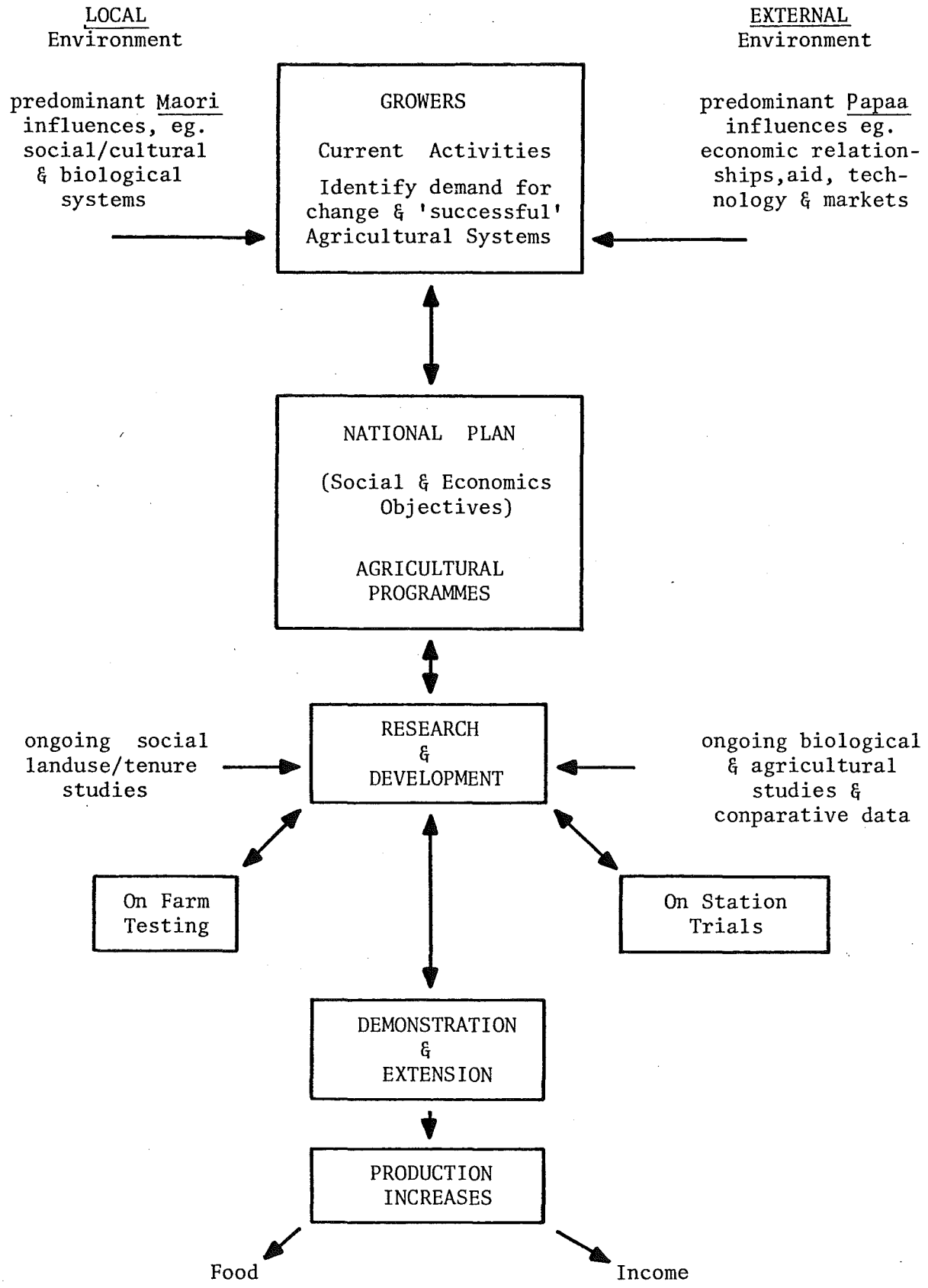
This programme has been partly used in conjunction with soil surveys by NZDSIR Soil Bureau in the Cook Islands, Niue and Tonga. An important omission in the programme was social data, however, and insufficient relevant field trials have been conducted. Without emphasis on all aspects of the second and third stages of the programme, extensive and valuable field-survey data may be less useful, and extension of research information which is too technical or irrelevant can occur. When research is conducted under the RSA, application of data at a production (grower) level is essential. Agencies funding agricultural research have not often recognised the opportunities that are available for refocusing technical developments by assessing their social and economic impact as the technology evolves.

Early in this research project (Taylor, 1978:53) I proposed an integrated Model of Agricultural Research and Development. This is an 'adaptational' model which identifies the conflicting perceptions of Island and Western cultures and provides a framework for adapting the ideas of each culture to achieve the goals of the Island people. In this framework, the Islanders define their own objectives and the methods that are most appropriate for achieving them. Research, planning and policy must be better integrated and include significant inputs from local people. The model is not an attempt to depict the present situation in terms of dependence or diffusion, but rather represents ways by which basic and applied research can assist the Islands to become more independent.

The Rural Systems Approach (see Figure One) builds on this 'adaptational' model, emphasising the cross-cultural and interdependent aspects of development, and the need for sophisticated technological change. Most particularly, this approach allows recognition of more 'successful' components in existing rural systems.

FIGURE ONE

A RURAL SYSTEMS APPROACH TO RESEARCH



The rural systems which the small Cook Island communities now form are very complex. The 'local' island systems, comprising long-established cultural and environmental components,have become influenced by many facets of 'external' systems. World-scale economic organisation has a dominating influence as economic dependency increases. 'Successful' components of existing rural systems should be identified with respect to their potential for longer-term cultural and environmental stability. Individual island communities are no longer isolated, however, and any new programmes for rural development and agricultural change must mesh with national objectives regarding matters such as self reliance and income distribution.

Agricultural research and development must therefore take place within a framework which supplies maximum information on a wide range of topics. But inputs to the planning process by professional agriculturalists, including those versed in social issues, must no longer dominate and exclude inputs from agriculture and rural development personnel working in the 'field'. Neither can the need for major inputs from the rural communities themselves be neglected any further. In chapter eight (8.5) I provide discussion of a practical application of the Rural Systems Approach in rural development programmes aimed at increasing domestic food production.

1.4 Research Methods

In this research project, the basic proposition being studied was very clear: that agricultural aid projects do not usually achieve their manifest objectives and that contributing social factors are likely to be important in this failure. Given this broad thesis, I was not constrained by any particular methodology. However, I did begin field research with two important methodological biases. The first was that methods employed in the field should reflect the nature of the topics being studied rather than any particular theoretical design. I believed, as Cohen has stated, that

> The most frequent source of difficulty is that type of methodological design which derives less from the nature of the field to be studied than from some theoretical frameworks with which the investigator equips himself to direct his observation of the field.
>
> (Cohen, 1978:2)

This orientation led to a predisposition towards the case-studies approach that I later adopted. The case studies reflected the importance that I placed on qualitative research methods and participant observation to complement quantitative data.

My first field trip to the Cook Islands was for six weeks from October to December 1977. The main aim of this field work was to conduct an initial survey of the islands to build up an overview of ecological patterns, population, settlement and land-use patterns, the operation of present subsistence and cash cropping systems and administrative and economic structures. Specific, planned tasks included coordinating with departments of the Cook Islands Government in the collection of basic and on-going data, familiarisation with existing and planned New Zealand aid projects which had implications for rural development, and open-ended interviews with 'opinion leaders' agricultural officers and aid personnel. I also envisaged that some cultural familiarisation would be possible but limited by time. The main purpose of this initial field trip was therefore to continue to build an etic framework for the study.

Detailed activities for the first main field period of nine months, from June 1978 to January 1979, were planned after a review of this initial field orientation and other background studies, combined with a review of the ethnographic literature. (In this review, the bibliography by Allen and Bassett (1968) was most useful.) As I stated in my research design, I felt that this main field period was

> likely to involve analysis of particular types of production, such as the citrus, pineapple and banana industries, study of selected villages involved in several types of agricultural production on different islands, and different attitude groups such as those involved in agricultural change and those retaining mainly traditional practices. It should be noted that this approach avoids concentration on one island or village as is common in socio-economic studies in the Pacific.

In summary, the following were designated in the research design as possible topics for research during the main field period.

a) Why and how people move from subsistence agriculture to cash cropping?

b) The importance of changes in food preferences and household food production.
c) Attitudes to labour and wage work, and allocation of time to agriculture.
d) The nature of changes in trade and exchange from traditional methods to those dominated by commercial markets.
e) Land tenure, attitudes to land use, and social problems involved with the control and utilisation of land.
f) Responses to technical problems of agriculture and views towards technical and financial assistance.

Information in all these main study areas was gathered in the field. The above topics were not studied in themselves, however, but rather where they were part of a case study.

With this case-studies approach, I hoped to solve some of the basic problems involved in trying to conduct 'small-scale' research in a society that has become increasingly extended in its areas of interaction. The first objective of the case studies was to cover all the islands of the Southern Group and learn something about each main area of agricultural activity. By examining several aid projects and agricultural trends on different islands, I hoped to maintain an emphasis on the large-scale process of planning aid, technological transfers, and rural/regional development. By using a case-studies approach, I planned to gain some benefit from knowledge of individuals, relationships and attitudes within a reasonably limited context that was open to participant observation and use of open-ended interviews. Through breaking the main field research into two periods, June 1978 to January 1979 and June to December 1979, the case studies gained important temporal perspective.

Detailed methods and data sources used during field studies are explained further in relevant parts of the following text. What is most important is that these case studies provided my main orientation in the field. Although 'agricultural' in their initial interest, the case studies were most useful in leading to an understanding of cultural processes. Very briefly, the studies concentrated

on the following areas, each synonomous with a particular type of agricultural production.

a) Pineapple production. Pineapple development is the subject of major New Zealand, and other, aid projects. This study fell into two areas (islands). The first was a study of pineapple development and land incorporation on Atiu Island. The second was a study of the transfer from household production of taro to cash production of pineapples on Mangaia Island.

b) Banana development on Aitutaki - another major aid-assisted project. This study led to my concentrating on the processes of project adoption, and more particularly, reasons for or against continuing grower interest in the project.

c) Citrus development - the staple commercial crop. I concentrated mainly on problems of extension and crop servicing. As events occurred with regard to government support for growers' associations, I focused attention on these organisations.

d) Marketgardening and production for air-freight to New Zealand markets. Growers on Rarotonga were my focus for studies of agricultural entrepreneurs, part-time cropping and agricultural employment.

e) Commercial pig production on Rarotonga. Entrepreneurs were solving problems resulting from intensive capital and technical development, with little outside assistance, and I concentrated on their activities.

f) Food production and consumption by households. I looked at domestic production of both livestock and rootcrops, including reasons for decreasing production and potential benefits for increasing production. This work was initially focused on the islands of Mauke and Mitiaro, where cash cropping was minimal, but data were eventually collected on all the islands visited.

Mobility was an important factor in making the case studies possible. With new airfields opened on Mangaia, Atiu, Mitiaro and Mauke during 1977, and established airfields on Rarotonga and Aitutaki, I was able to move quickly about the different islands. In the days when erratic inter-island shipping was the only means of transport this would have been impossible. As it was, shipping to the northern islands - Penrhyn, Rakahanga, Manahiki, Pukapuka and Nassau - would have allowed only a very short or very long stay, and I was therefore unable to include these islands in the field research.

Mobility was also important on each island for developing a wide range of informants. A small motorbike was essential on Rarotonga (circumference 20 miles) and also invaluable during longer stays on Atiu and Mangaia. Hire scooters were available on the tourist island of Aitutaki and feet and legs prevailed on Mauke and Mitiaro. At times, especially on outer islands, I was expected to use government transport and it would have been discourteous as a visiting Papaa to refuse. Generally, I was mindful of the shortage of both time and transport in government departments and the need to maintain as independent a stance as possible, so I provided most of my own logistical requirements in the field. It should be noted that mobility is not particularly unusual, and it was interesting to observe the rapid increase in both air and motorised transport during the time of the study. Often people from one setting appeared elsewhere, and this included informants.

I could not concentrate on the collection of primary data through case studies without being confident that there was a good base of secondary data to work from. There is a great deal of ethnographic, economic, technical, statistical and other material available, both on a 'macro' scale and relevant to the detailed studies. Basic demographic data are available from the Statistics Office, who also conducted an employment survey in 1979 and they planned a further study, in conjunction with United Nations agencies, for 1980. I knew that data on household consumption and production would be important, but I deferred work on this area because of the plan in the Statistics Office for conducting a household survey. However, the survey was postponed until 1980 and has yet to be carried out.

The Agricultural Planning Unit (APU) of the Ministry of Agriculture, which started with assistance under the aid programme of The Netherlands, produced numerous surveys, reviews and statistical summaries during the period of my research. Use of specific APU data, especially raw data, is indicated in later sections. Data on 1978 farm budgets of Rarotonga pig keepers were collected in collaboration with an APU officer, and parts of this material are discussed in chapter five.

Some data were obtained from administrative records on both Rarotonga and outer islands, and this information is indicated in the text. Where appropriate, such data were supplied to the Department or office of origin as soon as possible. I believe that any researcher has an obligation to collaborate with government offices wherever possible during a research project. This collaboration is particularly important for systematic, statistical-type surveys.

There is much ethnographic data on the Cook Islands, e.g. Beaglehole and Beaglehole (1938) and Beaglehole (1957), Hiroa (1932, 1934), Stephenson (1976), M.V. Mark (1976), and Baddeley (1978); this last has produced a valuable recent thesis on social organisation on Rarotonga. Crocombe (1964) and Baltaxe (1975) have presented detailed accounts of land tenure. Gilson (1952) and Stone (1967 and 1971) have provided a detailed administrative and political history, while recent politics are covered in Cook Islands Politics: The Inside Story, a book prepared by the Institute of Pacific Studies at USP in 1979 and written mainly by Cook Island authors; and another book is being organised by this Institute on land and society. Because there was a reasonable base of social data, I was able to concentrate on collecting information, and cultural learning, that was relevant to particular agricultural programmes.

I carried out one systematic, questionnaire-based survey, to obtain information on the supply of vegetables and fruits to markets and shops on Rarotonga. Details of the survey are discussed in chapter eight. There was little quantitative information on the Rarotongan market for local produce and, while recognising the value of a survey, neither the Statistics Office nor the APU had the time to conduct one. Having observed marketing patterns for over two years, I decided to

attempt a one-week pilot survey. A simple questionnaire/record sheet was distributed to a selected sample of shops, and the Avarua market was visited twice daily. After a week I had some useful information on the size and nature of the market for fresh produce. However, I had also confirmed my suspicions about the value of questionnaire surveys in this environment.

At least as important as the quantitative data obtained in this survey was the insight gained into topics such as the valuation of products, attitudes to cash sales, relationship of cash exchanges to more traditional exchanges based on kinship, and food preferences. Also on the non-quantifiable side of the survey was a healthy uncertainty some people had towards the facts and figures being sought of them. Some believed that the questions were asked either to check for tax evasion or to advance some 'scheme' of one of the political parties. To help quell this suspicion, I used my knowledge of, and contacts in, the marketing network to explain my work. This experience in turn reinforced my definitions of the situation. I do not advocate encouraging 'events' in the field, but this instance showed clearly that the techniques of one tool, the questionnaire, would have failed had it not been for the use of techniques more usually associated with participant observation. The combination of the two approaches led to a better understanding than could have been achieved by either method on its own.

Participant observation had taught me culturally acceptable behaviour which in turn assured the completion of the original data collection. As Cohen stated:

> In intensive participant-observational research, one is not an occasional visitor, but a fixture whose credibility tends to increase as his permanence becomes recognised among his neighbours. In such circumstances, one cannot retreat from the scene in order to work out what has been seen and gathered. One lives among it, and one has to fight one's way through the confusion of unfamiliarity day after day, not because it is the sociologically correct way to proceed, but because it is imperative for social survival.
>
> (Cohen, 1978:5)

Ethnography and participant observation therefore involve learning to 'see' and behave in the context of another culture. To "work effectively in a field, one has to learn how to behave within it" (ibid.:6).

Taro is a central feature of Cook Islands cultural systems. Therefore I will use it as an example of one cultural learning process that I experienced. Prior to my Cook Islands research I knew from reading and my own observations that the root crop taro is a culturally important food among Polynesian people. I knew its general appearance in the ground and on the plate - or leaf. I also knew that when eaten, taro seemed to sting my mouth and throat, felt very bulky and filling, and had to be accompanied by plenty of coconut sauce if it was to be consumed at all. To me, everybody seemed to be eating large quantities of an almost unpalatable and indigestible food.

My knowledge about taro was extended during preliminary research reading when I learnt that taro had a confusing number of botanical names, although in recent years botanists seemed to have settled on Coloçasia esculenta L. (Schott). I also learnt that Colocasia was not to be confused with its relatives, the giant taro (Alocasia), a swamp taro (Cytrosperma) and particularly dry-land or new-world taro (Xanthosoma). My reading also told me that in the Southern Cook Islands taro had been the basic food crop. It grew in swampy depressions between the hills and a coral formation known as makatea. The missionaries arrived, villages were moved from swamp to coast, and traders brought new food crops, money and imported staples such as flour. Population declined, people moved out of taro cultivation and the irrigation systems declined.

In the Cook Islands, I learnt that people still grow taro mainly in the swamp areas, but through use of shovels, most taro is now grown on raised beds called pai. On Mangaia in particular, however, large areas of wet taro ('paddy taro') are still grown. Taro grown in this way is called taro vai on all the islands, but on Mangaia it is more usually called mamio. I then learnt that there are many different varieties of taro grown in the Cook Islands. Some varieties grow only as pai, some grow as taro vai, and some in both ways. Other varieties are now grown on dry land. I learnt that uanga, for example, is a small, white-stemmed, Mangaian taro variety which cooks into a

dark purple colour with a good texture and a particular taste, and that uanga is so 'Mangaian' as to sometimes be called mamio.

Needless to say, by this time I had also learnt a good deal in general about taro. I learnt about different varieties, cultivation methods, the nature of labour inputs, taro land holdings, the operation of irrigation systems, and many other sociological aspects. It became apparent that proper cooking made taro very palatable, with or without coconut sauce. I even began to expound the nutritional value of taro to other Papaa and could eat sufficient that my behaviour was commented on as being 'un-papaa'. The irony was that we, like many 'modern' Cook Islanders, had to reduce our preferred intake to avoid putting on too much weight.

The process of learning, from the general concept of 'taro' to the specific attributes of uanga, involved knowledge from such diverse sources as Western botany and the Mangaian dialect. Associated with this process was a great deal of general cultural learning. All ethnography involves selected learning, but applied anthropology requires highly selected learning, varying from technical idiom of science and technology to 'local' idiom and terminology. In my research this learning was directed by the case studies. For a wider cultural knowledge I used completed ethnographies, particularly those of Hiroa, Baddeley, Mark and Stephenson. Overall, both emic and etic knowledge are combined in the writing of this dissertation.

1.5 Preamble to Following Chapters

Having examined issues of theory and research methods in this chapter, I proceed in chapter two, to provide a description of how the Cook Islands have become an increasingly dependent peripheral state. New Zealand, the ex-colonial power, has remained the main metropolitan centre. New Zealand controls much commerce, supplies aid, maintains an extremely unbalanced trade relationship and employs many Cook Island migrant workers. Social and economic changes that accompany dependency include a general move from agricultural employment and particularly from subsistence cropping. Despite considerable administrative emphasis, export agriculture has also declined. Internal migration has led to a distorted distribution of population by island and very skewed population structures on outer islands.

I argue that increasing economic dependency, which is part of international stratification, will result in widespread, cultural change. In chapter three, there is a description of some of the many cultural changes that have taken place since early European contact, first under missionaries and then colonial administrations. New forms of social organisation became based on the christian churches and villages. But change has continued and now results in many conflicts between Maori and Papaa ways. New patterns of leadership, types of authority and scale of administration are particular problems in contemporary rural organisation.

Chapters four and five contain details and analysis of changes in economic organisation. Early attempts to form nationalistic political movements, or self-reliant economic organisations such as cooperatives and growers' associations, were not encouraged by the paternalistic colonial administrators. Internal factionalism added to this suppression of many social movements. A central colonial bureaucracy became firmly entrenched and is now supplemented by a well-established political-economic élite. Government servicing of export crops became very centralised and inefficient. Recent attempts to encourage cooperative growers associations have been fraught with difficulties. Most development in the private sector is dominated by a few large companies and a growing group of local entrepreneurs. Entrepreneurs group together in both loosely-formed and highly organised organisations to achieve more competitive positions in the present capitalist system. A case study of commercial pig producers is described because the men involved sought solutions to problems of marketing and technical development largely on their own initiative.

With the administrative and economic structure centralised on Rarotonga, and increasing economic dependency, there has been a strong demand for export production. Also, economic development that has taken place has not been evenly distributed to rural areas, especially to outer islands. Therefore numerous agricultural projects have been started by the colonial administration and local governments with aid and technical assistance provided by the metropolitan countries. A high demand for cash income often led to high enthusiasm of growers for new projects, but the projects have not endured in the longer term. In chapter six, I examine details of this dilemma, using data from several projects on the islands of Mitiaro, Atiu and Aitutaki.

Much of the planned growth in agricultural exports was to be channelled through the processing factory established on Rarotonga. Citrus and pineapples are the two crops processed. But, as I explain in chapter seven, their production has not been achieved on a suitably large, or economic, scale. Land incorporations were formed in an attempt to achieve economies of scale, but they have been singularly unsuccessful. They provide a dramatic example of the failure inherent in agricultural planning which is conceived and executed with insufficient consideration for an existing rural system.

Finally, in chapter eight, I describe how social and economic change, exaggerated by export projects and economic dependency, has led to a move from subsistence production. Past food-production systems based on taro were both environmentally and culturally stable. In comparison, energy analysis demonstrates that industrial export crops such as pineapples were never likely to be sustainable. Food dependency, dietary deterioration and environmental degradation have accompanied cash cropping. Improved domestic food production remains an important but neglected objective for agricultural planning and should provide an initial step towards self reliance at both national and community levels.

CHAPTER TWO

SOCIAL AND ECONOMIC TRENDS IN A DEPENDENT STATE

Ward and Proctor (1979) have provided a realistic view of the Cook Islands over the intermediate future, if present trends continue. They conclude:

> The future then, must be one of closer links to New Zealand, with increased trade, greater tourist flows and more frequent movement of Cook Islanders between the two countries. The longer term solution might be the absorption of the islands more completely into the New Zealand economy with similar economic values operating in the Cook Islands as in New Zealand. There seems no good reason why, in time, the Cook Islands may not achieve in New Zealand terms, a similar position to that which Tasmania enjoys in the Australian Commonwealth - largely self-governing, highly productive in specialised areas and operating almost entirely within the mainland economy, though not able to support the total level of services it enjoys and thus dependent on more productive or less disadvantaged areas to provide subsidies for its domestic budget.
>
> (Ward and Proctor, 1979:356)

The increasing dependence of the Cook Islands on metropolitan countries, particularly New Zealand, has become the major context for their economic and social development. Social and economic trends in this group of small but far-flung islands are examined in this chapter, with special reference to the problems of 'dependency'.

Characteristics of dependency are examined in section 2.1. New Zealand's role in the Pacific is important, particularly its policies on aid and 'social' development. Through past colonial policies, and more recent trade and aid, the Cook Islands have become very dependent on New Zealand (2.3). Agriculture, based heavily on export crops, has made inadequate contributions to the Island economy (2.4) while tourism offers some prospects and numerous difficulties (2.5). Falling

birth rates and emigration have, however, led to the unusual situation of a relatively stable total population - briefly described in section 2.6. Emigration also leads to distorted age-sex structures and can be seen as contributing to dependency through the surplus labour pool that is made available to the New Zealand economy (2.7). The labour force has moved out of agriculture to employment in the local service sector, or in New Zealand (2.8). I conclude, in section 2.9, that the historical economic dependency of the Cook Islands has major implications for social change.

2.1 The Nature of a Dependent State

As a prerequisite to his analysis of the tourist industry in Fiji, Britton (1979) outlined the basis of a capitalist peripheral economy. He examined the characteristics of metropolitan-periphery relationships in the context of their historical development. This argument follows the work of Frank (1966), Dos Santos (1970) and Wallerstein (1974). Britton summarised his discussion:

> Without denying the existence of divergent interests between foreign capital and national Third World elites, the principle outcomes of this dependency are development strategies which overwhelmingly facilitate further subordination and selective articulation of the periphery. Allied to this is increasing polarisation in the periphery between those social groups which control domestic capital and act as agents for metropolitan capital, and those groups marginal to the dominant formation.
>
> (Britton, 1979:78)

Description of the complex social and economic relationships between polarising social groups is an important move away from theories of dualism, as summarised by Brook (1980:5). Criticism of the model of 'dualism' is of particular importance for understanding the nature of many developing economies. Frank (1966:94) considers "that the entire 'dual society' thesis is false", and leads to policies that "perpetuate the very conditions of underdevelopment they are supposedly designed to remedy". Under a dualistic approach only one sector, the relatively developed capitalist part of the society, is seen to have

external economic relationships. In turn, these relationships ensure that this sector remains 'modern' and 'developed'. Concurrently, the subsistence sector remains based on a traditional economic system of kinship relationships and reciprocal exchange. Inputs of capital, technology and education - in short, 'development' - have been regarded by 'planners' as the means whereby the subsistence sector can be lifted into the commercial sector.

Dualism has often been related to pluralism, where different sectors in the economy are controlled by different cultural groups. For example, Bollard (1976:80) discussed a modern sector in Tonga and he maintained that this sector was owned "by foreigners" and "Euro-Tongans". Similarly, the Fijian economy is frequently discussed in racial terms. Baddeley (1978:22) provided a plural perspective of Rarotongan society. In discussing the European sector, she stated:

> Their lifestyle is completely different from that of the local population and the two cultures exist for most purposes side by side with little interaction between them.

It is correct that many Europeans are on short-term contracts and live and work in a limited social sphere, but the importance of their interactions within Cook Island society should not be underestimated. Europeans may not be involved in village affairs, but they often act on behalf of metropolitan interests and hold key administrative and economic positions. They have considerable influence in advancing Papaa ideas; those people with whom they do relate intensively are often very open to new concepts and social change.

There is little doubt that in the Pacific Islands foreign personnel are often part of the selective penetration of foreign capital, but a more detailed account must be made of the nature of dependence and underdevelopment. At the same time, it is important not to assume a direct relationship between traditional systems of social stratification and the involvement of a minority of locals in the 'modern' sector. Neither dualism nor pluralism offer satisfactory explanations for economic development in the Cook Islands.

To understand economic development in the Pacific, the twin processes of commercialism and 'decolonisation' must be considered. During the 1960's and 1970's there was a period of political decolonisation, but as Brookfield (1972:4) stated, "the economic colonisation of organised business has achieved greater strength than ever before". Large, usually multinational firms have been the core of economic development. These firms have always emphasised vertical integration and pursued a diverse range of activities throughout the island economies. Colonial trade was handled by these firms and they have expanded since decolonisation began. Recent commercial expansion, however, has also involved a rapid increase in local entrepreneurial activity. This topic is discussed in detail in chapter five, but it must also be noted here as part of the 'selected articulation' and 'polarisation' of the peripheral island economies.

Using Brookfield's definition that "The colonial process is a revolutionary transformation of a society through invasion by agents of another society (1972: 1) the Pacific Islands can be viewed in terms of increasing colonisation. Templeton (1980) also described the dramatic social, economic and political changes in the Pacific as being revolutionary, but he considered the process to be part of "decolonisation" in the narrow sense of achieving self government. Self-government has been widely achieved with the particular exceptions of remaining French and United States colonies, but throughout the Pacific dependent relationships with metropolitan societies have expanded from early missionary activity, trade and administration. There is now a wide range of dependence on external commerce, education and cultural forms, and the relationships involved are usually located in selected areas that suit the metropole.

2.2 New Zealand in the Pacific

During the 1960's and 1970's, New Zealand's island territories - excluding the Tokelau Islands - achieved self government. There has also been an emerging regional identity, with New Zealand promoting Pacific institutions. New Zealand now has wide diplomatic representation throughout the region, and it has encouraged regional economic cooperation through the formation of the Pacific Forum and the

funding of its agencies for shipping and economic development. Particular diplomatic interest has focussed on strategic, transport and resource issues with the latter taking precedence at the end of the 1970's. Haas (1980:12) predicted that future New Zealand policies in the Pacific will be particularly concerned with "resource diplomacy".

International commerce has expanded greatly in the region and New Zealand is an important base. Companies operate from New Zealand in a wide range of activities including transport, tourism, wholesaling and retailing and a variety of service industries such as insurance. There has been some involvement in processing and manufacturing and this area is now being actively encouraged, with government assistance provided by the Pacific Islands Industrial Development Scheme. Bellam (1980) provides a useful discussion of New Zealand's role in commerce and trade.

Trade with the Cook Islands, Niue, Western Samoa, Fiji and Tonga has increased rapidly in New Zealand's favour, as shown in Table 2.2.1. These Island states are experiencing large trade deficits. Their exports are based mainly on a narrow range of agricultural products, while their imports from New Zealand cover a wide number of processed and manufactured product. In addition to tourism, remittances from migrant workers and other 'invisible' earnings, 'aid' provides a vital proportion of necessary overseas revenue, and the increasing demand for external aid completes the web of economic dependency.

Per capita aid is very high. Official aid to the South Pacific (excluding PNG) was $332 per capita in 1976 - more than ten times the figure for the Carribean micro-states (Herr, 1980:8). New Zealand and Australia remain the dominant metropolitan centres of aid, in addition to commerce and diplomacy, but increasing interest has been displayed by the major metropolitan powers located around the Pacific Basin. While New Zealand's aid to the region also increased dramatically in the early 1970's, it has since fallen steadily in real terms. New Zealand's Official Development Assistance in 1979/80 totalled $55.5 million. Of this amount $33.6 million (60%) went to the South Pacific. Indirect assistance is channelled through multilateral agencies, voluntary agencies, disaster relief and subsidy of shipping services.

TABLE 2.2.1

New Zealand Trade with The South Pacific NZ$(000)

Year ending June	1973		1974		1975		1976		1977		1978		1979		1980	
	Impts	Expts	Impts	Expts	Impts	Expts	Impts	Expts	Impts	Expts	Impts	Expts	Impts	Expts	Impts	Expts
Cook Islands	3,030	4,727	3,206	6,095	3,501	6,615	2,103	8,707	3,122	10,226	3,066	12,462	3,663	13,700	4,510	15,394
Niue	98	673	112	760	331	1,155	148	2,092	147	1,935	285	2,812	300	2,032	360	2,473
Western Samoa	1,275	5,789	2,873	6,043	2,675	8,605	1,971	8,163	3,514	10,337	3,100	14,175	5,009	16,271	4,185	18,731
Tonga	474	2,494	801	3,256	1,026	5,209	1,002	5,436	1,662	7,571	1,508	7,985	1,653	8,984	2,426	10,396
Fiji	3,542	20,057	735	23,240	4,874	26,616	13,465	35,034	17,204	45,738	22,182	46,816	11,547	55,019	26,932	71,142
TOTAL	8,419	33,740	7,727	39,394	12,407	48,200	18,689	59,432	25,649	75,807	30,141	84,250	22,172	96,006	38,413	118,136

Source: NZ Department of Statistics, Wellington

Note: Impts = Imports
Expts = Exports

Imports (cdv) to New Zealand from Islands

Exports (fob) from New Zealand to Islands, including re-exports.

As its political and economic involvement in the region has changed, New Zealand has tried to formulate new social policies on which official aid can be planned. McDowell, a past High Commissioner in Fiji, has described New Zealand's stance on social-development issues as having changed from a "directive" to a "responsive" emphasis.

> In determining New Zealand's role in the social field, officials have been guided over the past several years by a set of development criteria, laid down by successive New Zealand government, which stress such aspects as making a direct impact on "social and especially economic" development in the recipient country, helping to lift the living standards of the people on the lowest standard of living, creating job opportunities and reaching down to the village level. But these criteria are conditioned by the over-riding instruction that the view of the developing country itself is paramount in deciding on this or that development project or emphasis. In short, the system is responsive.
>
> (McDowell, 1980:3)

McDowell gave education policy as an example of the inherent difficulty of implementing this responsive approach. Education has been an area of primary New Zealand influence with "wholesale adoption of the New Zealand educational system, from curricula to examinations to the very teachers themselves" (McDowell, 1980:1). There has been ample recognition of the need for more Pacific-orientated education, but the implementation of new policies has been difficult. New Zealand staff on official aid have been slowly withdrawn, and increasing support given to national and regional training institutions. Nevertheless, McDowell (p. 5) estimated that the number of New Zealand teachers working in the region had nearly doubled since the early 1960's, for in that time formal education had expanded greatly and there were many more teachers employed directly by Island governments on local terms. Curricula and examinations have continued to be based on New Zealand concepts, with considerable pressure from parents to maintain this system.

Difficulties of employing a "responsive" aid policy have been further demonstrated by assistance to health services. With regard to health aid, McDowell (p. 8) stated:

> In this, as in other fields, New Zealand was responsive to the views of Pacific governments and did not press too far its own reservations about creating costly infrastructure.

Staffing of health services has been largely localised. In Tonga, Samoa and the Cook Islands, emphasis has therefore been placed on building central hospitals. There has been considerable debate among both donors and recipients on the benefits of providing expensive infrastructure, such as large hospitals, which is also costly to maintain in the long term. An alternative in health would be preventive programmes and rural-regional health services. In the Cook Islands, New Zealand has built hospitals on Rarotonga - despite some criticism (Mackenzie, 1978) - and, perhaps even more controversially, on Aitutaki.

Although much of New Zealand's aid is channelled into infrastructure and capital-expensive projects, often with a high technical component, our basic social policy - as reiterated by McDowell - demands that there should be "an impact at the village level" with an effort "to lift the living standards of the poorest". 'Getting into the villages' projects at the 'grass roots' level (taro roots might be more appropriate) appear to be laudable, if elusive, goals for rural development. New Zealand has made some effort in this regard, particularly through voluntary agencies. Despite an element of paternalism, Volunteer Service Abroad has been particularly effective. Corso has a policy of assisting village and 'self-help' projects, but has lost New Zealand government support due to its educational policy aimed at fostering understanding of the basic causes of poverty. New Zealand officially supports some voluntary projects through the Voluntary Agency Support Scheme, and funded fifty-one projects worth $160,000 in eight Pacific countries during 1979 (McDowell, 1980:11). New Zealand also supports small community projects under the Head of Mission Fund ($144,000 for the S. Pacific in 1979/80). Through this fund, projects up to $3,000 can be supported directly by New Zealand overseas posts without needless recourse to central bureaucracy. However, these are only very small proportions of New Zealand's total aid effort, and as McDowell concludes realistically,

> ...it is true to say that only a small proportion of the disadvantaged are as yet being reached by external donors including New Zealand. In the last analysis, it may prove that our role in reaching such people is limited by both social and political factors.
>
> (McDowell, 1980:11)

Many people involved with aid in the Pacific region - including New Zealand's Ministry of Foreign Affairs - have recently questioned aid and development policy. These reviews are included in a report from the South Pacific Bureau for Economic Cooperation (1976), a seminar on aid organised by NZ Ministry of Foreign Affairs in 1977 Ward and Proctor (1979) and a recent issue of NZ Soil News (Vol. 26,4,1978). Numerous recommendations arose from a NZ Conference on International Development held in 1979 and entitled "Effective Aid for the Eighties": a conference sponsored by New Zealand agencies and organisations interested in aid and development issues.

To summarise, the following general criticisms have been levelled at aid programmes and New Zealand agricultural aid in particular.

a) Aid tends to have been channelled into services, employment and consumption rather than primary production and industry. Increased consumption and long-term costs can be a burden for the recipient country, while in contrast, increased production remains a priority to finance loans and reduce large balance of payments deficits.

b) Donors have tended to favour capital-intensive, technically complex assistance from their own economy and manpower resources. This kind of aid has not usually increased employment or led to rural development. Many projects have failed to last.

c) These two types of aid (above) tend to increase dependency on foreign economies for further aid, markets, investment and manufactured/processed products.

d) Professional and technical skills should be developed in the recipient countries with an aim towards reducing expatriate manpower and associated problems. Therefore, training components, both 'on the job' and institutional, must complement manpower assistance.

e) Middle management/technical skills have often been lacking. Volunteer agencies such as VSA could fill such positions while training proceeds. Short-term, highly technical skills from 'outside' should come from an established and experienced corps of advisors, with full training and preparation, rather than 'jobs for the boys'. Wherever possible new technology must be developed so that local advisors are fully involved, and confident about extending the new ideas.

f) Information and coordination are often inadequate at regional and national levels. Valuable data and analyses relevant to project planning can exist, but be difficult to retrieve. Data are often available, but not collated or stored. Specialists in specific areas such as agriculture are needed to coordinate projects.

g) Aid negotiations can be influenced by short-term political considerations for both donor and recipient. There tends to be a lack of well-defined, long-term goals. Donors are often keen to 'sell' projects, while recipients are afraid to turn them down, even for good reasons. 'Responsive' policies are difficult to implement.

Many of the development/aid problems are organisational and political in nature. Agricultural production will increase for a longer term only if these social-political problems can be reconciled. Aid-assisted projects should endure after the planned inputs have been completed. This is rarely the case. In fact, as SPEC (1976) and Ward and Proctor (1979) suggest, aid will continue to be a priority within current economic patterns. Capital, manpower, training and direct budget support appear to be increasing rapidly throughout the region. The social impact of these inputs must be fully considered. New Zealand's aid to the Cook Islands will be discussed throughout the remainder of this dissertation.

2.3 The Cook Islands as a Dependent State

The Cook Islands comprise fifteen volcanic islands and atoll complexes scattered over 1,140,000 square kilometers of ocean (see Location Map). The total land area is only 236 square kilometers (see Table 2.3.1) and much is steep or infertile. Twelve islands are inhabited.

While the Cook Islands have been self-governing since 1965, they are far from independent from New Zealand, and the future seems to hold even less independence. Both the Cook Islands and New Zealand need to assess closely this increasing 'dependency' and the resultant social and economic costs and benefits for both sides. As a small, self-governing state in 'free association' with New Zealand, the Cook Islands are

TABLE 2.3.1

The Cook Islands Land Areas and Distances from Rarotonga

	Area km^2	Distance from Rarotonga (km)
Rarotonga	67.1	-
Mangaia	51.8	176
Aitutaki	18.1	224
Manuae	6.2	198
Atiu	26.9	185
Takutea	1.3	189
Mitiaro	22.3	227
Mauke	18.4	240
Palmerston	2.1	432
Suwarrow	0.5	820
Pukapuka	1.3	1144
Nassau	1.3	1088
Manihiki	5.4	1040
Rakahanga	4.1	1080
Penrhyn	9.8	1180
TOTAL	236.6 km^2	

Source: Statistics Office, 1977

Note: For populations 1956-1976 see Table 2.6.1

unusual. With free association they have an open constitutional choice to move to full independence. Such a move is unlikely given the present problems of administering such a small state. Most notably, New Zealand retains responsibility for the Cook Islands in foreign affairs and defence.

The Cook Islands Government is confronted by a multitude of administrative requirements and has inadequate resources to deal with them. The increasing demands for modern social services have to be met from Rarotonga to the most isolated islands, without the economies of scale available in a metropolitan welfare society. These problems are examined in detail by SPEC (1978) and in Ward and Proctor (1979). The complications of small-scale management are compounded by the prevailing nature of social relationships, especially in personal relations and kinship systems. Other aspects of these administrative problems are discussed in later chapters with regard to agricultural management.

Castle (1979:127) maintains that even in the most optimistic circumstances a country such as the Cook Islands cannot sustain economic growth from its own resources. He concluded that without permanent foreign aid the only realistic alternative is a state of "no growth". This "no growth/dependency issue" will force the Island governments to locate resources and services in restricted centres. Castle says people will have the choice to move and utilise such facilities or stay on their home island without them. He considers a similar option will apply to the choice of staying in the Island state or moving to seek a metropolitan lifestyle, and with continuing New Zealand citizenship, the Cook Islanders have this alternative. Proctor and Ward (1979:145) reach a similar conclusion.

Development with very limited choices is clearly the present case in the Cook Islands. These limited choices follow the assumption that both internal resources and outside aid are ineffective in providing the capital and technology that are necessary for sustained economic growth and future economic interdependence, rather than continuing 'dependence'. Only through changes in established approaches to development, by both the metropolitan and developing countries, can these restricted social-economic choices be altered. Regional and rural development might be encouraged further for example, but new social costs and benefits will then be evident.

Despite the early hopes of the New Zealand government following colonisation in 1901, the Cook Islands have never been economically self-sufficient. New Zealand has contributed increasing subsidies to administrative costs (see Table 2.3.2).

TABLE 2.3.2

NZ Subsidy to Cook Islands 1925-1966 (Selected Years)

(In pounds)

1925-26	11,589
1935-36	15,568
1945-46	43,669
1950-51	130,899
1955-56	294,243
1960-61	575,435
1965-66	871,500

Source: Stone (1967:2)

During the 1950's, studies by Belshaw and Stace (1955) and Aickman (1956) suggested means for giving the Cook Islands more economic and constitutional independence. But following Self Government in 1965, there were in fact some large increases in New Zealand aid. Since 1977, this contribution has been around six million dollars per annum (see Table 2.3.3), and falling in real terms. At the same time, however, other aid from Australia and United Nations agencies in particular has increased. New Zealand's present aid is approximately divided into $3 million for direct budget assistance (around 15% of total CI Government expenditure), $2 million for projects such as hospitals, barges and agricultural schemes, and $1 million for manpower assistance - mainly teachers. The Cook Islands also receive additional benefits from NZ regional aid and subsidies on shipping services. Subsidy of the NZ Shipping Corporation service to the Cook Islands, Niue and Tahiti amounted to $3.4 million in 1979/80 (Templeton, 1980:23).

The many close ties between the Cook Islands and New Zealand have wide implications for economic and agricultural policy in the Cook Islands. Use of the New Zealand dollar in the Cook Islands means

TABLE 2.3.3

NZ Trade with and Aid to the Cook Islands (1970-79)

Year	Balance of Payments in NZ favour (Million $)	NZ Aid to CI (Million $)
1979/80	11.9	6.7
1978/9	10.0	6.0
1977/8	9.4	6.0
1976/7	7.1	6.0
1975/6	6.6	6.3
1974/5	3.1	2.5
1973/4	2.9	2.9
1972/3	1.7	3.0
1971/2	2.4	2.8
1970/1	3.4	2.5

Source: NZMFA and NZ Department of Statistics

Note : Balance of payments deficit is calculated from value of exports + re-exports from New Zealand and exports (c.d.v.) to New Zealand.

that exchange rates and inflation in New Zealand are rapidly reflected in the Cook Island economy. Other economic trends in New Zealand, particularly employment levels and wage purchasing power, affect Cook Islands emigration and the amount that can be remitted back to the Islands.

New Zealand is the major market for Cook Island exports and likely to remain so. The state and nature of the market for fruit juice and fresh vegetables are vital, as is a selected trading policy for pineapples and bananas. Trade barriers have restricted some Island produce such as tomatoes, for example, under pressure from New Zealand growers and the NZ Vegetable Growers' Federation. Some citrus products face increasing opposition from New Zealand growers. Under the new regional trade agreement (SPARTECA), however, there are special provisions to protect exports of processed fruits from the Cook Islands. Trade monopolies are also important, with Fruit Distributors Ltd. controlling the trade of bananas, fresh pineapples and fresh citrus (see Bellam, 1980).

The Cook Islands are affected by New Zealand foreign policies over matters such as trade, regional transport and negotiations for fishing rights. This close relationship must continue to influence development possibilities and choices. With respect to air transport, Haas (1980:1) maintains that New Zealand's control of the Cook Islands' air rights "provides an important case study in how a small state loses some sovereignty to a larger power". Haas also questioned the influence of the New Zealand Government in persuading the Cook Islands Government not to negotiate fishing rights with Russia in 1979. The Cook Islands are very dependent on the New Zealand Air Force to police their fishing zone.

2.4 Agriculture in the Economy

The Cook Islands economy remains precariously balanced. There has commonly been a deficit between exports and imports. Frequent trade imbalances occurred between 1901 and 1945 (Wilson, 1969:36). The average annual visible trade deficit between 1946 and 1957 was £180,000 per annum - with imports valued at c.d.v. in the country of origin (Stone, 1967). The value of total imports soared to a high $18.3 million (c.i.f.) in 1978 and continues to rise. But total exports were only $2.4 million in 1978 - a visible trade deficit of $16 million. In 1979 exports reached $3.8 million, mainly due to increases in prices and production of copra. The trade deficit continues to widen, although it is offset by the high value of invisible earnings through aid, remittances from Cook Islanders overseas, tourism and overseas investment. The main hopes for improving this economic situation lie in agriculture and tourism.

Agricultural exports can be regarded as crucial to the future financing of economic development, and the provision of imported goods and new public services. But agriculture has always been an inadequate base of support for the 'modern' Cook Island economy. The missionaries, colonial administration and local governments have all required subsidy and assistance from outside sources. Attempts to stimulate commercial agriculture through aid or investment have been inadequate and inconsistent. There have been many agricultural projects since the 1860's, and some of the more recent efforts and failures will be examined in this dissertation. Financial assistance has always been heavily committed to support of the public administration and services,

Clothing factory and citrus packing, Rarotonga, 1948/1949.

rather than investment in primary production. There has been particular neglect, to the present day, of the production of domestic food crops. Food crops can make a contribution to the national economy through import substitution, and also add to social welfare.

Production of the main agricultural exports since 1900 has been very irregular (Sadaraka, 1961). From a general peak in 1910-1930, there was a decline in production until 1945. Copra, bananas and tomatoes were all exported, but citrus was the main crop. Citrus trees, seeded from ones planted by the early missionaries, reached a peak of production in the 1920's (Wilson, 1969:36). By that time many original shipping and packing problems had been overcome. But ageing trees, lack of proper management, new diseases, land tenure problems, inefficient shipping and falling prices brought a decline in citrus during the 1930's. Bananas and copra production also fell during the recession. Petitions to the NZ Parliament led to the Fruit Control Scheme in 1937 and later a revised Citrus Replanting Scheme (CRS) in 1945.

Since 1945, progress in agriculture has been slow and erratic. Following the Second World War, New Zealand's administrative policy was aimed primarily at improving social services, such as health and education. Stone (1967:277) described the "imbalance between social services and economic development". Paternalistic policies ensured that there was an increasing demand for social services and less ability to sustain them from local resources. Apart from the CRS there were only a few, ill-conceived attempts to stimulate economic development based on local resources with an aim of ensuring economic self-reliance. At the same time, as aspirations changed, differential wage rates and life styles between the Islands and New Zealand stimulated a growing tide of emigration.

Following the Belshaw and Stace report (1955), cooperatives and community development became a major social policy of the administration, but there were many problems (see chapter four). Stone (1967:292) described how the activities in community development were strongly modeled on Papaa conceptions. Adult education depended on a single expatriate teacher. Community centres, Country Women's Institutes and youth clubs were all formed, with variable support.

Village councils were deferred. With inadequate finance, public media of radio and newspaper had a slow start. The first administration secondary school, Tereora College, did not open until 1954 (Davies, 1969:283).

During the 1950's, the Department of Agriculture was heavily involved with servicing the trees grown under the CRS. Inadequate attention was given to research, crop development or extension work (Stone, 1967:322). Overall, agricultural production declined in the 1960's, but output of citrus increased in the 1960's following the opening of a processing factory on Rarotonga by Gregg's Ltd., a New Zealand company. The factory allowed second-grade fruit to be used, although all grades were eventually processed as production continued to fall short of factory requirements. The CRS received large financial inputs from New Zealand, but it was never a financial success (Bollard, 1977). Pineapples were also grown for the factory, but without real success (see chapter seven).

Erratic production of the main export crops has contributed to economic instability. These perishable products have been subject to poor shipping services, low prices, hurricane damage and many technical/ biological difficulties. Copra production also fluctuates, mainly due to prices, with recent periods of high prices in 1974 and 1979, but copra has always remained an important crop. Growers have therefore retained an opportunistic attitude to cash-cropping. This attitude is particularly evident in the recent move to short-term production of fruits and vegetables for export by air. This move does not mean that there has been any major transfer of resources from citrus to shorter-term crops, for citrus was declining anyway. But positive attitudes of growers towards short-term production will almost certainly affect any efforts to revive citrus production, and therefore affect the fortunes of the processing factory - owned by the CI Government since 1979.

Over the 1970's, there was a marked overall decline in agricultural production, including 'traditional' export crops and household production. Agriculture, livestock, fishing and pearlshell contributed only 16 per cent of the Gross Domestic Product in 1976 and 17.5 per cent in 1977. The service sector provided the bulk of the GDP (Keijzers,1978).

This decline in production is closely related to the movement of people out of the agricultural sector to employment in the service sector - based primarily in Rarotonga - and to New Zealand.

2.5 Tourism and Development

Since the international airport opened in 1974 there has been a dramatic increase in visitor arrivals. Around 19,500 visitors arrived in 1979. An annual increase of 15% can be expected to continue. Three thousand of the visitors are Cook Island Maoris who return home from New Zealand, usually at Christmas. Other New Zealanders form the bulk of the remaining visitors. Further expansion of the industry will depend on increased numbers of tourists from North America,particularly through the provision of new air routes. There is a variety of licenced accommodation ranging from the international-standard Rarotongan Hotel to twin unit motels. Several of the larger motels/hotels are foreign-owned, with the CI Government having a third share in the 'Rarotongan'. There has been a policy to encourage the development of small units, but the company register and applications for licences show that all these units are operated by a small élite of Papaa and Maori who have the necessary capital and entrepreneurial ability.

Tourism has received increasingly critical attention in studies of development. Tourism provides a clear example of international stratification through expansion in a selected sector of the peripheral economy. This development serves to emphasise international inequalities and also internal inequalities (Britton, 1979:36). The tourist sector is usually well integrated with the metropolitan economy - in the case of the Cook Islands this integration revolves around one airline, Air New Zealand - but the sector is not always well integrated into the local economy. There are consequently many planning difficulties to be overcome in the peripheral economy, particularly the allocation of scarce capital resources.

The limited integration of tourism into the local economy has been criticised for accentuating the growth of Third World élites (Britton, 1979:78). Further criticism includes the loss of foreign exchange through imported goods, services and management, influences on inflation - particularly of food prices - and the contribution to a movement of people from rural areas. Local government revenue includes

tax and duties, but these are often outweighed by the costs of providing infrastructure including roading, sewerage, water supply and electricity, and services such as police and customs. There are also the effects of the tourist industry on land prices, and a general contribution to accelerating social change.

With good planning, tourism can benefit the local economy, including the agricultural sector. Transport networks, both internally and externally have been improved and supported. Cook Island growers have taken full advantage of available freight space on flights to New Zealand, but this is of course also invaluable to the airline. Tourists can provide a market for local produce, although in agriculture this tends to be a limited benefit enjoyed by a few efficient growers who can provide continuity and quality in supply. There are also possibilities for publicising produce being sent to the New Zealand market. Handicraft industries can be encouraged; although some symbolic artifacts might be downgraded, others, such as the 'Tangaroa', can rise to prominence.

Controlled tourism can have positive benefits on a small outer island, but most development is now concentrated on Rarotonga. There is a growing demand among Cook Islanders for new styles of entertainment and drinking habits, which can be provided in a restricted outlet. There are opportunities for local groups to perform, provide feasts and gain employment.

At present, tourism is making a major contribution to social and economic change and will be an essential part of future economic development. Tourism need not always lead to further economic dependence on the metropolitan countries. Further decisions will be required on social costs and benefits, particularly with regard to ownership, management, employment and supply of services.

2.6 Population Trends

From the 1820's to 1840's the population of the Cook Islands was decimated by diseases. The population of Rarotonga fell from a pre-contact figure of around 7,000 to a low of less than 1,900 people in 1937. Around 6,000 people died in thirty years (Gray, 1975:342-6).

Subsequently, the total population grew steadily, at an average annual rate of 1.4 per cent from 1900, to reach a peak in 1971 of 21,323 people (Hayes, 1979:1). From 1971 to 1976 the combination of a falling birth rate and high rate of emigration has led to a decrease in population to a total of 18,112 in 1976. Between 1966 and 1976 fertility fell from 225.2 to 130.6 live births per thousand women aged 15-49. There was only a small decline in the death rate. In that same decade, natural increase fell from a high of 738 in 1968 to a low of 351 in 1976 (op. cit.:5-7). From 1966 to 1976 emigration averaged 677 people per annum (see section 2.7). Since 1976 the population has remained relatively stable, an unusual situation for a 'developing' country.

Table 2.6.1 shows populations and percentage population changes from 1956 to 1976. Between 1966 and 1976 some islands suffered a severe loss of population, a loss which inevitably affected economic development. At the same time the proportion of the total population living in Rarotonga has increased from 43.2 per cent in 1956 (51.8% in 1966) to 54.1 per cent in 1976. However, since 1966, the proportion of Rarotongan residents not born on that island has remained stable at 40 per cent (op.cit.:10). This indicates that there has been a movement from the outer islands to New Zealand, in particular, a fact further supported by the decline in outer-island populations.

The census figures do not show the high rates of circular migration from outer islands to Rarotonga to New Zealand, and in reverse - albeit at a more moderate rate. Outer islanders visit Rarotonga for shorter stays, to visit relatives, as part of a tere (travelling) party, or for intermittant employment and business reasons. People make short-term visits to New Zealand, and there is the annual influx of visitors from New Zealand at Christmas.

Circular migration has important consequences for maintaining family relationships and has a variety of social and economic functions. It is an important aspect of monetisation and a source of social change. Emigrants who return can have a considerable impact on attitudes and relationships in their home village. Material changes such as new trucks and houses are obvious, but psychological changes, including increased motivation to bring change in economic patterns and social organisation, are more subtle and often far-reaching.

TABLE 2.6.1

Populations and Population Changes 1956-1976

	1956	1966	1971	1976	% change '56-'66	% change '66-'76
Rarotonga	7212	9971	11478	9811	+38.3	- 1.6
Aitutaki	2565	2579	2855	2414	+ 0.5	- 6.3
Mangaia	1970	2002	2081	1530	+ 1.6	-23.5
Atiu	1307	1327	1455	1312	+ 1.5	- 1.1
Mauke	815	671	763	710	-17.7	+ 5.8
Mitiaro	275	293	331	305	+ 6.5	+ 4.0
Palmerston	77	86	62	53	+11.7	-38.3
Pukapuka	638	684	732	786	+ 7.2	+14.9
Nassau	110	167	160	113	+51.8	-32.3
Manihiki	661	584	452	263	-11.6	-54.9
Rakahanga	341	323	339	283	- 5.3	-12.3
Penrhyn	619	545	612	531	-11.9	- 2.5
TOTAL*	16680	19247	21323	18112	+15.4	- 5.9

* Note: There were small, itinerant populations on the Islands of Manuae and Suwarrow.

Source: Hayes (1979:3) and CI Statistics Office (1977).

2.7 Migration

New Zealand's 'colonial legacy' has had particular influence in the formation of migration policies, and migration from the islands has become an integral part of New Zealand's social and economic relationships with the Cook Islands, Niue, The Tokelau Islands, Western Samoa and Tonga. McDowell (1980:11) stated that "permanent entry is largely reserved for people from the former dependencies". Substantial migration began during the Second World War, with the majority of migrants coming from Western Samoa. Migration continued to increase with more than half the total populations of Cook Islanders, Niueans and Tokelau Islanders now living in New Zealand, including increasing numbers of islanders born

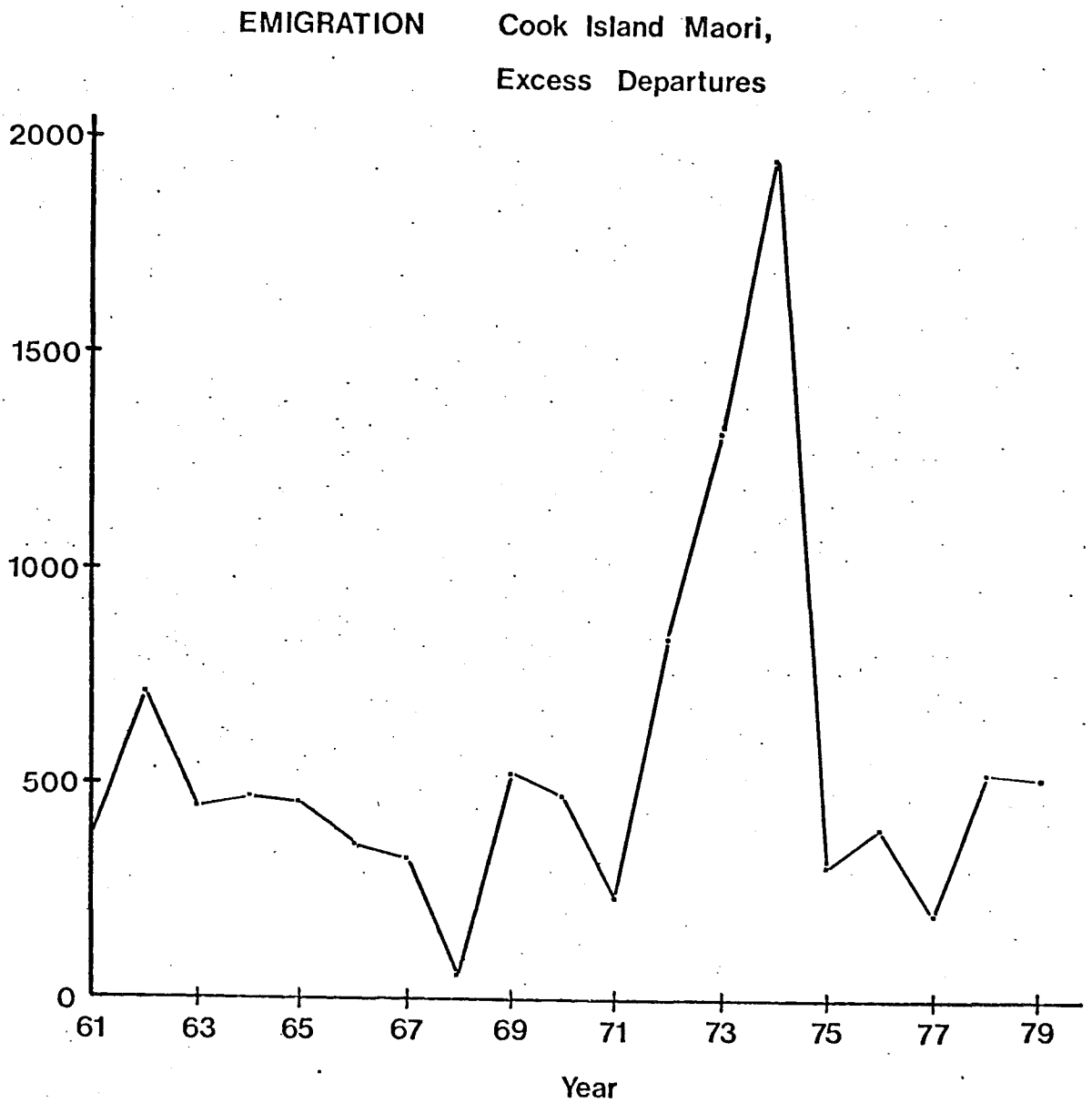
there. People from these latter three groups are New Zealand citizens, who have unrestricted entry. Western Samoans now enter on a quota basis. Tongans and Fijians enter mainly on a temporary basis, usually with a work permit.

For the Cook Islands, emigration has been a major demographic factor since the 1940's. As family ties to New Zealand increased and economic aspirations changed, emigration became more important. An average of 135 people per annum left between 1946 and 1959. Departures of Cook Island Maoris have been even higher since 1961, with a burst of emigration in the early 1970's (Figure Two). This dramatic departure of people coincided with the finishing of the new airfield and subsequent layoff of workers. There was also a prior decline in agricultural production of crops such as tomatoes, pineapples, citrus and bananas. The opportunity to earn money in New Zealand is an important factor influencing the individual decision to emigrate, and the majority of the emigrants are therefore of young working age. Overall, the demand for workers in the New Zealand workforce appears to be the most significant influence on the levels of emigration.

Hill (1979) has used the concept of a "reserve army of labour" with respect to the employment of women in the New Zealand workforce. Hill described a "latent" category of unemployed labour (1979:8). Latent unemployed are drawn into the workforce when the metropolitan economy expands. When unemployed they either form a floating labour force or return to rural areas. Employment of migrant Island labour can also be studied through this model. deBres and Campbell (n.d.) for example, have discussed temporary employment of Tongan labour, relating the increase in temporary migration during the early 1970's to the expansion of the New Zealand economy and the related demand for industrial workers. Cook Islands emigration also increased rapidly at this time, but declined to its lowest points during New Zealand's two most recent economic recessions - in 1968 and post 1975.

When the latent pool of labour is drawn from prospective migrants in a peripheral island economy, numerous social, political and social welfare problems, and costs, are avoided in the metropolitan society. In addition, it becomes increasingly easy to attract this latent labour from the donor economy as technological change - itself originating from the metropolitan economy - brings a decline in subsistence production and an increasing demand for consumer (imported) goods.

FIGURE TWO



Sources: Statistics Office, Rarotonga;
Frazer (1974).

Migrant Island workers can work for lower wages because their earnings may not have to cover the full costs of a family who remain in the Island economy. Migrant workers may, in fact, often be working for specific purchases such as a house or truck, accentuating the temporary nature of their employment. Some Cook Islanders now come to New Zealand on a seasonal basis as well, to work in the meat processing industry.

Factors other than the demand for employment in New Zealand could influence Cook Island emigration. 'Bright lights' and relatives most likely have a constant, probably increasing, pull effect. Initial disillusionment after self government coincided with a decline in emigration in 1968, rather than an increase. Political events in the Islands could influence emigration, but there are now two political parties, who provide a government and opposition. Demographic factors - the size of the cohort reaching emigration age - could be important, but there was very little difference between the population aged 15-35 in 1966 compared with 1971, prior to a major decrease and increase in emigration respectively. Hurricanes and shipping losses, which cause intolerably high risks on cash (export) crops, might also be a factor in precipitating an individual's decision to leave. These risks certainly add to the demand for employment out of the agricultural sector. Nevertheless, labour demand in the metropolitan economy remains the vital force on emigration.

A high loss of working-age population from rural areas has many implications for economic and community development. Table 2.7.1 shows dependency ratios from 1956 to 1976. The dependency ratio is an indication of the age structure of a population. A high ratio means that there are many children or old people who are dependent on working-age people. Dramatic decreases in population through emigration are even more important when they involve a large number of young people who have just entered the work force. Pressure is inevitably placed on the available labour for provision of either cash income or household food. Remittances can offset this demand on income earners at home, but amounts and timing of remittances tend to vary, and reciprocal gifts such as food are often made in return.

In theoretical discussions of production for use rather than gain, productive effort has been examined through Chayanov's model, where labour inputs are considered to vary directly with the number of dependents (McKinnon, 1976). In the reality of the Islands, however, this model is clouded by the complexity of circular emigration, remittances, opportunistic involvement in the cash economy and many social and psychological implications arising from membership of a peripheral Island society.

TABLE 2.7.1

Dependency Ratios 1956-1976

	1956	1966	1971	1976
Rarotonga	84.36	105.3	103.6	94.5
Aitutaki		140.6	132.1	132.4
Mangaia		156.3	157.2	148.4
Atiu		153.2	164.1	155.9
Mauke		142.2	153.5	156.3
Mitiaro		190.1	173.6	202.0
Palmerston		126.3	121.4	112.0
Pukapuka		130.3	133.1	137.5
Nassau		111.4	150.0	105.5
Manihiki		139.3	144.3	157.8
Rakahanga		139.3	149.3	197.9
Penrhyn		144.4	139.1	159.0
Southern Group (excluding Rarotonga)	108.75	151.1	148.4	146.4
Northern Group	91.58	135.1	139.8	149.4
Cook Islands	94.97	123.4	121.2	115.6

$$\text{Dependency Ratio: } + \frac{\text{Popn. 0 to 14 years + 65 and above}}{\text{Popn. 15 to 64 years}} \times 100$$

Source: CI Central Planning Bureau (1977:54)

Economic functions are only part of the labour requirement in a village. People are needed to prepare an umukai (feast), entertain a tere party, build community halls or sing in church. Those capable people remaining will be called upon to fill numerous leadership roles in the family, church or village. As Graves and Graves (1976) found on Aitutaki, the depressing effects of the loss of young and capable people can be even more important than any change in the dependency ratio. Older people remaining on islands like Mauke and Mitiaro frequently lamented the loss of people from the island. In short, the social life of a village is less vialbe, and young people become even keener to leave. The need for rural development in these circumstances is hard to refute, but any objectives planned are correspondingly more difficult to achieve.

While emigration to New Zealand reduces overall population growth, there is less pressure on land, employment and social services. Any pressure that does occur is most likely to be found on Rarotonga. When emigration to New Zealand slows, Rarotonga can expect to have to bear the extra population. This becomes a regional development problem, for at the same time an island such as Mitiaro needs extra population to be more socially and economically viable. Therefore rural development in its widest sense becomes vital.

When Castle (1979:127) advocates a two-tiered development, where islanders can 'choose' to remain on outer islands, he shows a poor awareness of the situation on those islands. Generally the people who stay are those who cannot go. They are old, infirm, have few 'economic' demands, or have family responsibilities looking after relatives and family land. Otherwise, they are young, pre-highschool children. Yet there is an increasing demand to be filled on outer islands for consumer goods and welfare services. Without adequate population resources these welfare requirements must be subsidized, or more satisfactory employment/lifestyle is sought elsewhere. In either case there is an increasing reliance on New Zealand and other countries to generate rural development programmes or accept immigrants and provide aid on a permanent basis. The balance of immigration and aid will depend on the economic situation in the metropolitan country.

2.8 Employment

The population movements from outer islands to Rarotonga and from the Cook Islands to New Zealand, combined with the decline in agricultural production, have meant a large movement of labour out of the agricultural sector. In 1945 only 15 per cent of the males over 15 years of age were engaged in employment other than primary production. By 1956 this figure was 20 per cent and these people were concentrated in Avarua (Stone 1967:355). The percentage of females employed in the secondary and service sectors doubled in the same period to 16 per cent of women over 15 years old.

In 1956, 71 per cent of the total 'economically active' population were employed primarily in agriculture. By 1976 this figure had fallen to 23 per cent. But it is important to recognise that in 1976 only nine per cent of the economically active population on Rarotonga were

involved in agriculture compared to 50 per cent on the outer islands (Central Planning Bureau, 1977). This figure is reinforced by Baddeley's figures (1978:79) which showed only eight per cent of the economically active population of urban Ruatonga (in Avarua, Rarotonga) - excluding housewives - were not employed in wage and salary work, with only three out of 190 working-age adults employed in subsistence agriculture.

A survey of employment and wages, conducted by the CI Statistics Office (1979) shows that there were 1,476 salary earners on Rarotonga and 84.2 per cent were in the public service. Of all the 3,179 part and full-time wage and salary earners 58 per cent were in the public sector. Employment on Rarotonga is now heavily committed to the service sector. New government policies are aimed towards moving employment out of the public sector and encouraging private enterprise. The Ministry of Agriculture provides a good example of this policy as in the past it has been heavily committed to crop-servicing functions. However, as I will discuss in later chapters - the policy is not easy to pursue, as the private sector is often ill-equipped in managerial and technical skills and lacks a satisfactory supply of capital or credit.

Apart from labourers in the Ministry of Agriculture, there is little labour regularly employed in the agricultural sector. The pineapple incorporation on Atiu has employed labour on a regular basis and had 15 labourers in 1979. Poor returns to this labour are examined in chapter seven. The Mangaian Growers Association had a staff of 27 in November 1979 and paid annual wages totalling over $50,000. A group of labourers has been regularly employed to make copra on Manuae Island.

I recorded six growers on Rarotonga who regularly employ from one to five labourers each. Labourers are usually paid on a daily or weekly basis which includes up to three meals a day, and can also include accommodation and regular 'shouts'. Pay rates varied from $16 to $30 a week depending on the value of payment in kind and hours and type of work being done. Other growers employ part-time labourers at peak times. Generally the agricultural employers are entrepreneurs who are attempting to move away from the complications of using relatives

for labour (see chapter five). Kinsmen need not be paid, but by the time they are fed and reciprocal obligations are fulfilled the costs of family labour can outweigh the total value of the crop produced, and it might therefore remain unharvested, apparently neglected. Sometimes work groups are employed. For example, 'bush beer schools' or a Boys' Brigade group will dig a taro patch. Women's groups pick the Ministry of Agriculture's coffee on Atiu.

2.9 Conclusion

The Cook Islands have inadequate resources for maintaining present economic changes. They remain heavily dependent on external aid, finance and technology, and continued opportunities for their labour force to gain employment in New Zealand. Imports and trade deficits have been increasing rapidly. Agriculture and tourism are the most likely basis for economic independence in the future. But agriculture has made insufficient and erratic contributions to the economy and tourism can create more problems than are solved. Therefore continuing aid seems necessary if economic growth and social services are to be maintained on all the islands. To help remedy this situation, there needs to be more investment of both capital and technological development in the rural sector. But these changes cannot be made without major social ramifications, and future efforts to plan and implement rural projects must be more comprehensive.

Emigrants are now an integral part of the increasingly monetised economy. They represent an unfilled demand for labour opportunities, a demand mainly met locally by the service sector. The emigration of working-age people to New Zealand when the metropolitan economy is buoyant emphasises the Island's role as a surplus labour pool. Although emigration lessens problems of population growth, the resulting high dependency ratios for population in rural areas indicates many social problems faced in the maintenance of satisfactory village life.

Rural self employment has declined drastically. Without extensive plantation development, opportunity for agricultural labour have been limited. But the rural labour force can be expected to increase if grower organisations and commercial operations expand in the future.

Rural programmes should aim to stimulate employment, including both self employment and wage labour, for the benefit of rural communities, but numerous social factors complicate rural planning. Particular problems are posed by continued emphasis on export cropping, as discussed in later chapters.

The Cook Islands, and their experience of social-cultural change, can be realistically viewed only when external relationships are fully accounted for. These dependent relationships must be seen in their historical context, taking account of increasing stratification between metropole and periphery. In association with the broad social and economic trends outlined in this chapter, there have been closely associated cultural changes, as discussed in the next chapter. Present economic instability, social disorganisation and cultural change are all closely related.

CHAPTER THREE

LAND AND SOCIAL ORGANISATION

Particular interpretations of 'traditional' Cook Island society have become established in the literature. These limited interpretations reflect some of the external influences on land and custom, although there is ample evidence to demonstrate that changes have been complex and considerable adaptation has occurred. The following review aims to describe a dynamic picture of cultural change and adaptation to historical events, rather than a static and stereo-typed viewpoint. I will argue in this chapter that social change has not only been widespread, but that it continues to be important.

'Traditional' social organisation is examined in section 3.1 and the cultural impact of European contact, missionaries and colonisation are outlined in section 3.2, with special reference to changes in land tenure. Further, more-recent changes to land tenure have many implications for agriculture (3.3). Changes in kinship are important for they affect land tenure and reflect wide cultural changes (3.4). Social relationships are no longer based solely on the family and village, and there are many conflicts between traditional - Maori - and modern - Papaa - ways (3.5). These conflicts have special implications for 'large scale' organisation and administration necessary for many new crops and 'development' projects (3.6).

3.1 'Traditional' Social Organisation

It is important to look briefly at social organisation prior to European contact, as this was the basic setting for a process of continuous social change since early in the nineteenth century. It is apparent that many authors, and many Cook Islanders, have a limited view of 'traditional' social organisation. In fact, as a result of the changes in social organisation brought about by missionaries and early colonial administrators, 'traditional' organisation appears to be quite

different in places to 'pre-contact' organisation. The new 'tradition' particularly with regard to land tenure, was legitimised in the 1915 Cook Islands Act and subsequent legislation. While confusion about 'tradition' prevails, not only academically but also in the field, generalisations must be limited. Therefore I will concentrate on change rather than any 'final' statement.

Pre-contact social organisation in the Southern Islands was part of a sophisticated cultural adaptation for utilising the limited resources of the islands. In brief, each tribe (vaka) came under the leadership of an ariki and probably occupied at least one major catchment of taro swamp (puna), the vital starch-producing resource. The vaka was divided into basic land divisions known as tapere. These were occupied by a lineage (ngati) under the leadership of a mataiapo or an ariki. Each tapere contained a segment of concentric resources that were available on the island. These resources included ocean, outside reef, reef, lagoon, beach, sandy soils, cliffs, makatea (up-raised coral formation), taro swamp, fertile soils and infertile interior soils (see Figure Three).

A share of wet land and water was the main cultural-ecological component of the tapere on islands that cultivated large areas of taro. A continuous supply of water was a vital part of the horticultural ecology of cultivated taro. The supply had to be neither inadequate nor excessive, and one of the main tasks of the mataiapo was to ensure that the water supply was operated efficiently. Resource rights belonged to the extended kin group and the mataiapo was trustee of these rights

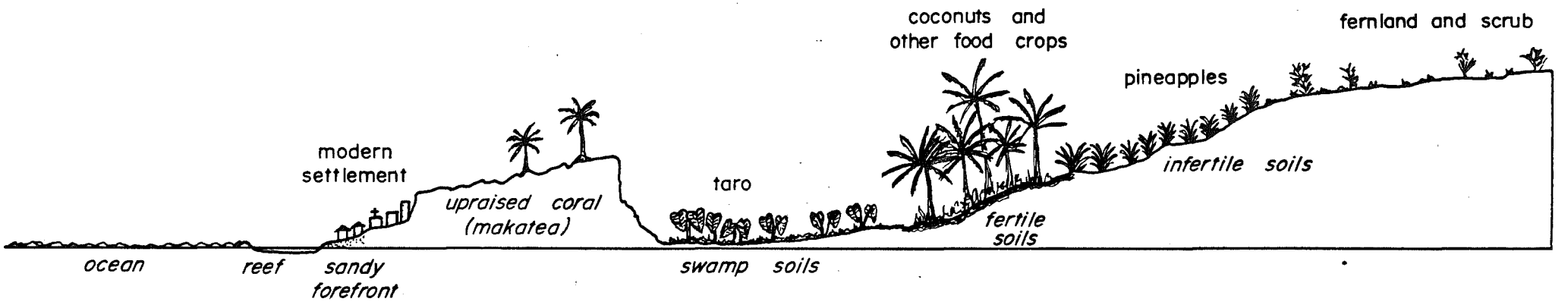
Pre-historic villages and ceremonial sites (marae) were situated close to the swamp (Bellwood, 1971). Baddeley explained:

> The identity of the ngati was established by its association with a particular tapere and a chiefly title, after which the ngati was named. Each ngati had its own marae which served as the ritual centre for the ngati.
>
> (Baddeley, 1978:119)

Today, elders and leaders of the ngati continue to try to maintain the sanctity (tapu) of the old marae sites.

FIGURE THREE

MANGAIA CROSS SECTION



In her review of pre-contact social organisation on Rarotonga, Baddeley (p. 122) considered that the ngati and vaka were then primary units of organisation; but they have lost such significance today. Baddeley discussed how Crocombe divided the ngati into major lineages, headed by a mataiapo, and minor lineages, headed by a rangatira or komono, whereas Baltaxe reinterpreted the ngati, describing it as a "descent-based corporation" within the vaka - a political alliance cemented by adoption and marriage (ibid.: 115). Baddeley agreed with Baltaxe on the concept of the ngati as a corporation rather than a lineage and in contrast to Crocombe, who maintained that

> Rarotongans do not distinguish terminologically between types of ngati, but they do distinguish between types of mata'iapo.
>
> (Ibid.: 121)

The two most important traditional titles (taonga) are those of ariki and mataiapo. Baltaxe described these as corporate titles, with the tapere being essentially a corporate, territorial group. For instance,

> The distinction between the two corporate titles may in fact have been no more than the recognition of leadership of a confederation of autonomous corporations represented by their respective taonga and tied together through a network of multiple marriage and adoptive alliance.
>
> (Baltaxe, 1975:193)

Davis (1947) described how the ariki was a chief of special status (mana) who was selected by the district's mataiapo "for certain social purposes". He was "trustee" of the land in his district, but "not entitled to 'own' land in his own exclusive right". Selection of chiefs was based on lineage (membership of a kopu ariki) military prowess and involvement in community affairs (Jacob, 1979). Descent from previous title-holders, however, appears to have been an important aspect of the ritual of selection. For example, Papa Raui Pokoati (Hansard, 23 September 1977:752) described the allocation of a title within the kopu ariki on Mitiaro:

> Previously the title of ariki belonged to the tribe. It did not necessarily go to the first born or even the second or third or fourth. It went to the most suitable person. The ariki title could be rested on anyone within the family, but with the approval of all the family.

Baltaxe (1975:124) described how the Land Court introduced the system whereby land that was traditionally set aside for production of food for a chief is made distinct from land held by a "title holder" with a supposition, therefore, of individual ownership. Baltaxe asserted that this distinction of permanent chiefly lands was impossible in the context of the traditional land-tenure system. No such distinction is apparent on Mangaia, for example, where the land court never operated. There, the chiefs (aronga mana) allocate land to individuals, including those with titles, and some land is set aside to produce taro for ceremonial purposes in each district under leadership of a kavana (equivalent of mataiapo on Rarotonga).

Stephenson (1976:51) stated that there appeared to have been one mataiapo for each of the seven land districts on Atiu, with three ariki titles arising in the last pre-contact war. Stephenson's informants were confused as to the pre-contact role, if any, of the rangatira.

The basic territorial unit that came under the land chief was the tapere. The whole social, or "corporate" group that occupied the tapere was the matakeinanga. With variations in terminology, this system operated throughout the Cook Islands, with the greatest variations in type occurring on Pukapuka and Mangaia. Raui Pokoati (Hansard, 23 September, 1977:751) described the 'corporate' nature of the matakeinanga on Mitiaro:

> The proper ancient custom is that the ariki and all the title holders of the land will unite all the people in the matakeinanga and share the land equally. Not one of them would be missed out. And not only in land matters, but also with sea fishing. Everything required to sustain life was equally shared between everyone. And what came out of the kopu tangata, vaka and matakeinanga from generation to generation as a custom bound the people as one.

In the same debate (Hansard:770) Dr. Davis said:

> Now, Madam Speaker, we had what some have termed an "aristocratic democracy"...we did have the ariki, we did have the mataiapo, rangatira, the kiato and the people. Under that system apparently, from what we can see and read there was a system of checks and balances where no one could become a despot, and if they did, they were put out to sea in their canoes. So we have, Madam Speaker, a system with highly productive land, they knew how to utilise the land, an organisation by which the best was given to all of the people, and all the people's needs were taken care of. And there was time for leisure and time for developing a cultural and social life.

Within the corporate arrangement of matakeinanga, there were sub-groups which were "neither permanent nor corporate" (Baltaxe, 1975), in comparison to the major lineages of which they were a part. The chiefs of the 'minor' lineages within the ngati, and the branches of these lineages, were called komono, rangatira or kiato depending on status. Following the arguments of Baltaxe, these were temporary positions which were not very important organisationally, if they were recognised at all.

Hiroa (1934:43) refers to the title of rangatira as a Rarotongan term for headship in a chiefly family (kopu ariki). The rangatira appear to have been especially important as leading warriors in times of warfare. The House of Ariki (1977) describe the komono as deputies to the ariki or mataiapo, and the komono were important in the ritual surrounding the installation of chiefs.

> A Kiato is a member of the tribe who has no honourable standing. Sometimes he is a younger brother of an Ariki or a Mataiapo family; or a stranger, for household services, is ranked as a Kiato.
>
> (House of Ariki, 1977)

The pre-contact chiefly ranks also included the skilled craftsmen for making houses, canoes, cloth and other crafts, the teachers and historians, and the 'wardens' of fishing and cropping. These chiefs were known as taunga (Davis, 1947; Jacob, 1979). The power of the taunga was diminished considerably by the missionaries and church affairs. Previously, status could be achieved through the above skills, as well as through warfare.

The greatest exception to the typology related here appears to have been provided on Mangaia, the island where taro cultivation was of greatest economic importance. Cultural adaptations there were made to basic tribal organisation through warfare over the taro-swamplands (puna). Warfare over foodlands meant that districts (catchments) became more important to social and economic organisation than tribes, which remained loose social groupings under the leadership of an ariki. Eventually, warriors obtained more power than hereditary chiefs. Hiroa described this social organisation, where the Mangaia, or high chief, was

the supreme ruler. The Mangaia was not an hereditary title. District chiefs (pava - today kavana) were in charge of the six puna and appointed from among the warriors. Sub-districts (tapere) were ruled by the "eating land chiefs" (kairanga-nuku) who are now referred to as the ui rangatira. Families obtained shares to the land (tuanga) and strengthened their rights through cultivation (Hiroa, 1934:122-125). All the puna were terraced and cultivated at the height of the population (circa 3,500 c.f. 1530 in 1976). Today there are 34 rangatira, six kavana and only one ariki, who make up the chiefly body (aronga mana) on Mangaia.

Before proceeding to examine the changes that were later imposed on these basic cultural systems of social and economic organisation, it is important to note some details of regulatory institutions which existed. The clan or ngati was exogamous over at least four or five generations. Polygamy was the norm and appears to have been used by the chiefs, in particular, to cement alliances. The practice of adopting children (feeding children - tamariki angai), usually children of relatives, was very common (Davis, 1947:198) and a means of maintaining social relationships.

The question of whether inheritance of land and title was originally unilateral and usually patrilineal, with virilocal residence, is open to debate. Baddeley (1978:118) summarised the probable situation on Rarotonga, discussing Baltaxe's view that the ngati was fundamentally bilateral, with general virilocality giving an impression of a patrilineal system. Baltaxe's model was presented in contrast to Crocombe's apparently unilineal, agnatic model, although Baddeley found that Crocombe referred to agnatic relationships more with respect to land than to full membership in the ngati (ibid.:223-4). On Mangaia, bilateral descent was recognised but patrilineal descent was more important, especially for land rights (Hiroa, 1934:96-97). On Pukapuka, maternal sub-lineages were important in economic control of land - particularly taro beds - and also for formulating marriage rules (Beaglehole and Beaglehole, 1938:228). It seems probable that individuals traced links to more than one lineage, but it is clear that there were checks through sex, status and need in the ownership of land, and achievement and ability in the ascription of titles.

3.2 Colonial Impact and Cultural Change

The missionaries brought many social changes with their new religion, laws and economic system. On Rarotonga, construction of the coastal road (Ara Tapu) and coastal villages shifted the focus of social life from the puna and marae which were along the ancient inland road called the Ara Metua (Parker, 1974). Similar changes in settlement occurred on the other Southern Islands. Food gardens and land resources remained in the tapere, but food production diminished in importance as economic changes and land tenure problems developed. (These changes in food production are discussed in detail in chapter eight.) Meanwhile, populations fell dramatically.

"European notions of the nature of effective power and prestige" were a dominant force in re-shaping social and economic organisation (Baltaxe 1975:190). The new social model was reinforced by new avenues of status including the Church, control over registered lands and participation in the cash economy. The missionaries ended warfare and introduced their own legal system. One important new regulation was the restriction on polygamy, which had been vital in political alliances between chiefs. The missionaries also required money and encouraged cash crops and trade. Therefore the territorial and economic imperatives of the traditional social system no longer applied and the whole cultural system was very open to rapid cultural change.

Land acquired capital value, and the position of the chiefs was changed. Baltaxe claims that the abolition of polygamy and warfare placed greater emphasis on the "junior title" to strengthen kin ties and corporate organisation. Concurrently, rapid depopulation placed the rangatira in charge of large areas of land, enabling them to form their own corporations (Baltaxe, 1975:194). The ariki became very powerful land holders. Multiple-marriage connections and extensive networks of relatives ensured that the ariki were connected to many ngati, and they therefore had strong claims to control of land belonging to ngati that died out. In addition to new legal powers, the ariki also achieved considerable control in the new commercial trade (ibid.:104).

The historical analysis of Baltaxe describes a process of considerable and far-reaching social change. By 1901, when the administration was annexed into New Zealand's colonial hands after the

long period of missionary control and the short British Protectorate from 1888, there was a feudal concept of land tenure operating in the Cook Islands. Baltaxe claims that this concept was the result of a structured English view of feudalism and social stratification, in combination with the new processes of social and economic change. This structured view of social stratification is reflected in Crocombe's (1964:27) idealised presentation. In his hierarchical representation, the ariki heads the vaka over the mataiapo (head of major lineage), over the rangatira and komono (heads of minor lineages), over the kiato (head of branch of minor lineage), over the metua (head of the extended family) and the unga (commoner). As Baddeley (1978:121) has pointed out, Crocombe's presentation is very much an "ideal type". Also, it reflects the new changed system far more than the evidence available describes the 'traditional' system.

Beaglehole (1957) has indicated some of the problems inherent in discussing stratification in the Cook Islands. He quoted Pa Ariki's (Rarotonga) description of the prevailing system to New Zealand Legislators in 1903. The outline given by the Ariki is the same as that presented by Crocombe. The system was described as being maintained by a system of food tributes. Beaglehole did not comment on the possible bias of the Ariki's presentation, but proceeded to describe Aitutaki society, which he maintains "was not marked by a class system as rigid as that of Rarotonga". This was simply because everybody on a small island is related in some way, and again, seniority in descent seems to have been more important than class distinctions:

> Therefore there were no landless commoners or tenant cultivators on the island, but only groupings of lineages in which each person considered himself the social equal of other tribal members, though on occasions the senior members of the group would receive specially large food distributions, for instance, out of respect for their seniority in descent.
>
> (Beaglehole, 1957:168-170)

In writing about Pukapuka, Beaglehole and Beaglehole (1938:235-236) considered that the system of ranking there was altered with colonialisation. The term mataiapo was introduced for minor chiefs and more chiefly ranks were created. The Beagleholes referred to confusion among their informants as to the traditional status of the chiefs. Beaglehole (1957:170) concluded that if one's initial orientation

is towards chiefly stratification and feudalism, then an interpretation of rigid social strucutre is the result. On the other hand, in practice, "status could not be sustained and seniority society, not a class society, became the society that actually operated on a day to day basis".

Today, despite all the pressures against undue power for the ariki, they still control large areas of land and retain some social control and prestige. But this power had almost certainly reached a peak at the turn of the century, when 'egalitarian' New Zealand administrators arrived in force.

The Cook Islands were annexed by New Zealand in 1901, and the Land Court was established. Jacob (1979:141) described the attitude of the new administration.

> Politically the Court was to break the power of the chiefs; socially to individualise families; and economically, to facilitate increased production. Although the chiefs were formally recognised by the Land Court, their power over land was severely reduced.

The NZ colonial administration, in an attempt to raise agricultural productivity and provide leased land for settlers, established a land court and the registration of individual titles. The Land Court provided for the surveying of named sections (tuanga enua) into individual, numbered, freehold titles. These sections, controlled by basic household units (kainga) comprise the main divisions in the present system of land tenure (Baltaxe, 1975:156; Baddeley 1978:125).

Under the new system, all co-owners had equal rights despite their possible absence or disinterest in using the land, therefore allocation according to sex, status or seniority in descent no longer prevailed. The new, legally-organised, land units were defined by bilateral descent with both husband and wife having legal rights and all children succeeding to an equal share. People "were not required to live on their lands to keep their claim alive once they were registered as owners", but land rights were given to non-members of a ngati who had occupied land for over twenty years (Baddeley, 1978:126). The importance of the ngati as a form of social organisation had been removed, while the basis was laid for a proliferation in ownership and fragmentation of land.

Baltaxe (1975:156-65) described the early efforts of the land court, under the authority of Col. Gudgeon, when strenuous efforts were made to change the traditional system of patrilineal inheritance. The system of bilateral inheritance was imposed on the Rarotongans and later on the other islands, with the exception of Mangaia and Pukapuka.

> Statements by Col. Gudgeon as well as the other early Land Court judges make it clear that they viewed the land tenure system, as they were codifying and in effect creating it, as a means of distributing land to as many people as possible, so that each, individually or collectively, could work it.
>
> (Ibid.:158)

This view of the early colonial administrators led to a system which is markedly different from the traditional system of social organisation and land use under the ngati, or corporate land-organising unit. Baltaxe believed that this official stance early in the 20th Century was based on the distorted power obtained by the ariki during the 'missionary' period.

> Gudgeon's basically development-orientated policies, then, were designed to free the common people from the over-extended powers of the ariki who, he believed, were stifling the island's economy by insisting on rights to land which were not rightfully theirs and preventing development of that land by its proper owners.
>
> (Ibid.)

By registering titles, Gudgeon hoped to provide secure tenure and incentive for cash-cropping and white settlers. Over 1,400 acres had been leased to settlers by 1906, but leasing then slowed and alienation of land did not become a major economic problem (Wilson, 1969:35). A general increase in cash cropping did occur and Crocombe (1964:131-138) describes considerable increases in agricultural exports and earnings at times over the next 50 years. But there were many factors other than secure tenure that influenced this production: better prices, marketing organisation and shipping services, for example. There was also an increasing demand for both cash income and purchases of imported goods.

3.3 Contemporary Land Tenure: Changes and Problems

By 1945, as population grew and two generations had passed, the new system of land inheritance began to take real effect, with as Crocombe has discussed, claims being made by secondary members of a lineage on both sides of their family. The Court continued to act according to Maori custom, arguing that the new system was a change in custom (Crocombe, 1964:125-126), and in 1957 the Appellate Court made a binding ruling that all children should inherit equal rights to land. This is the legal system that remains today, causing multiple ownership of very small, fragmented parcels of land. Contemporary land tenure has been described in detail by Baddeley (1978:297-330).

Many changes have resulted from the increasing fragmentation of lands under the new succession system, and new social and economic attitudes to the land. Plots often have to be surveyed either by the Survey Department or, recently, by private surveyors to establish relative interests of co-owners. Lawyers are now hired more frequently and decisions are tending to reflect points of law rather than lengthy genealogical presentations. This change is partly the result of large backlogs of unheard and undecided cases. Also as Baddeley (1978:314-6) indicates, genealogical information recognised by the Court can be heavily biased, with no clear guide as to what is acceptable.

Tenure problems are no longer primarily concerned with matters such as the distribution of plots and water in taro swamps, or access to reef resources and 'gathering' territory. Immediate concerns revolve around house sites, and the size, distribution and scarcity of plots for cash cropping. New concerns include 'ownership' of previously unproductive beach sites, which are now suitable for building motels or houses to rent. Emigrants living in New Zealand are keeping up contacts and communication with family members at home who might be the key to future house sites. Outer islanders on Rarotonga send food and money to relatives on their home island to ensure that their children have access to land. They also save money to build a house and thus secure a site. Bewildered businessmen from overseas look for large blocks of land to lease for plantation agriculture, hotels or industry.

Despite these changes, the family retains considerable influence in land decisions, especially the location and size of plots. Changes to titles such as partitioning or leasing require family permission, which is usually reached at a family meeting (uipaanga kopu tangata). The Land Court insists on the consent of the majority of co-owners. This system has far-reaching social implications. A great deal of 'family' activity has land matters as a background. Family decision-making is influenced by a complicated set of exchanges and obligations involving food, feasts and favours. Activity within the family from looking after grandma to maintaining family 'books' (records of family matters from genealogies to funeral donations) all form part of the manoeuvering for land rights. Land matters are therefore important for giving the family identity and an associated framework of reciprocal relationships in a time of rapid social change. On the other hand, competition over land can lead to serious family conflicts, and decisions may never be made. While families continue to allocate land rights on an 'unequal' basis, despite the 'legal' rights of individual members, fragmentation is kept in check. Therefore the strength of families is very important, and further breakdown in family structure will compound tenure problems.

Not surprisingly, the land-tenure system has many implications for agricultural production. Large tracts of good land can lie idle through historical circumstances which have led to few owners or many absentee owners. By contrast, a large group might seek to use a small nearby area of land for intensive cultivation. One man may maintain a citrus orchard but leave the ripe fruit rotting because his relatives, who want to share the profits, will not cooperate for picking. Full of enthusiasm, brothers will plant a new orchard, especially if there is assistance for cultivation and cheap seedlings. Subsequently, the plot may be neglected for lack of fertilisers, slashing, herbicides and other necessary but costly inputs which require cooperation and management by the owners. Fragmentation can lead to a grower owning a number of small plots miles apart. Economies of scale are often impossible. These fragmentation problems are common on both Rarotonga and the outer islands.

However, it is unrealistic to view land-tenure problems as the only, or even the major, constraint to production. Many other problems will be examined in this dissertation when particular projects or

programmes are discussed. Most interesting here is the response of growers, particularly commercially-minded growers operating on either a full or part-time basis. Two important considerations influence these growers with regard to obtaining land. The first is security/length of tenure, the second is size. Modern growers require security for sole management. This does not mean they will have no social obligations to return. A grower will pay gratuity and rentals for leased land, and rent in kind (atinga) for an informal lease. In many cases he will be involved in informal arrangements with 'owners' or relatives with his obligations ranging from monetary payments to regular 'donations' of food and produce.

Formal leasing is a particularly topical subject as leases of sections and other small plots are increasing on Rarotonga. Leasing effectively excludes co-owners from a share in profits. Leases by Cook Islanders are often sought with the intention of obtaining mortgages - the main source of security for bank loans. Of the 524 leases current in 1978 nearly half (249) were taken out since 1971. The new Leases Approval Committee began hearing applications in December 1976. By June 1979 they had heard 262 applications for leases and 136 applications for mortgages (J. Batchelor, pers. comm.,1979). Old long-term leases of larger agricultural blocks are traded, but with fragmentation and the difficulty of obtaining family agreement, there are very few new large leases. Consideration and annual rental payments have increased dramatically, especially with the influence of foreign buyers and businesses. There is a particular demand for leased sections for housing. Part of the demand arises from outer-island couples living on Rarotonga. But young couples also lease land from themselves as co-owners so that they can mortgage their section as security for a housing loan. A family will sometimes lease land to an 'outsider' to avoid allowing a particular family member use of it.

Leased land can be mortgaged to raise commercial loans that are necessary for capital developments. It is very interesting to note that many of the larger commercial growers use leased land, particularly in the Arorangi-Titikaveka districts on Rarotonga. Old long-term leases, originally made to settlers,have been bought by local growers, some of

whom are original land owners. A number of the better-kept, larger citrus plots are on leased land. However, there is a general problem with the age of the trees. Several growers are being forced to replace old orchards with less than twenty-five years of their lease remaining. When the leases expire the lands are likely to be broken up, as rights to succession will be re-opened.

Lands on short-term lease of up to five years are increasingly used for crops such as vegetables and pineapples. These leases cannot be used for mortgages but the bank is likely to take them into account when assessing any loan. Without any guarantee of renewal, growers are naturally reluctant to initiate longer-term projects on this land. In addition to security, size is also a problem with many of these short leases on small plots. A minimum size is necessary for tractor work and other mechanisation. Transport costs in time and fuel are rising sharply. Suitable plots for development will be more difficult and expensive to either lease, 'borrow' or obtain family permission for.

On outer islands there have been some interesting recent changes, particularly with regard to achieving economies of scale in pineapple cultivation. On Mangaia these economies are being sought through the Mangaia Growers' Association, while land incorporation is the method on Atiu. On both islands, pineapples are cultivated on inland fern areas that previously were sparsely utilised. However, Mangaia has retained its traditional land-tenure system in which power to allocate land rights remains with the aronga mana (traditional chiefs). Although there are large areas of fern land on Mangaia, disputes over land allocation have occurred and are likely to increase as the cultivated area is expanded. The aronga mana have no legal powers to resolve land disputes and their traditional authority has been reduced to the point where more growers will be likely to dispute their decisions openly. Recently, there has been some social pressure brought to bear on growers who are acquiring 'too much' land. The problems with land incorporation on Atiu are examined in detail in chapter seven. Both cases demonstrate further recent changes in the land-tenure system.

While, as I have discussed, academics now seem to agree that the prevailing land-tenure system is the result of far-reaching changes since pre-contact times, there often remains a misconception that Pacific

tenure systems are 'customary' and static (e.g. Hau'ofa and Ward, 1979:58). 'Traditional' land tenure no longer exists in the Cook Islands. The new system, itself the subject of rapid change, reflects changes in the whole society - the conflicts between traditional and modern ways. To some Cook Islanders the system is archaic, a block to 'progress' and their own ambitions. For others, the changes are beyond their ability to understand or cope. They see a system of rapidly increasing legal and monetary complexity.

Many of the existing problems are the result of conflict between two cultural systems. Dr. T.R.H. Davis described one aspect of this conflict.

> Madam Speaker, having covered a little of the good things and the intelligence of our ancestors in knowing how to live on small islands - that is what Polynesians mean by the way, people who live on small islands - and our knowledge to do this, we are taking the systems on continents and bringing them here and trying to make them work. Madam Speaker, this is nonsense, and it is wrong and it will never work, and it hasn't.
>
> (Hansard, 1977:771)

It is encouraging that some Cook Islanders are now interested in evolving a system of land tenure which is suited to the modern requirements of their own society.

Successive administrations have reviewed aspects of land tenure, usually with a view to increasing agricultural production. Various amendment acts have been implemented. The original Cook Islands Act (1915) provided for the consolidation of land interests and the partitioning of titles. The Cook Islands Amendment Act (1946) introduced occupation rights for citrus plots, circumventing the problems inherent in multiple ownership of a long-term crop. Under this legislation, multiple owners could vest their rights in one grower for as long as the plot was utilised for citrus. In this way, the Administration could assist the establishment of citrus plots under the Citrus Replanting Scheme, and many growers subsequently joined this scheme. The Cook Islands Amendment Act (No. 32, 1960) introduced vesting orders for house sites, allowing individual ownership of a house.

Since Self-Government in 1965, the Cook Islanders have been in a position to rectify some of their problems of land tenure. However, the land issue has remained politically sensitive. Past and present political parties have maintained loose and uncomprehensive policies towards the issues of land reform (Jacob 1979:143-5). The Cook Islands Party Government introduced some legislation. The Short-Term Crop Leases Act (1966) and amendments were introduced to enable leases of agricultural land to be made for up to five years. The Land Use Act (1969) was introduced to provide for zoning of land uses, and a Land Use Board was established to administer the Act. Perhaps the most important act was the Land Facilitation of Dealings Act (1970). This Act was designed to allow for land incorporations such as the large Enuamanu Incorporation on Atiu. The Leases Restrictions Act (1976) instituted a Leases Approval Committee to implement government policies for restricting leases.

There is considerable interest in problems of land tenure at the administrative and political levels, as shown in the report of the Department of Justice and Lands for 1975/76, Recommendations of the House of Ariki on Ancient Customs (1977), and the subsequent debate on these reports in the Legislative Assembly in September and October 1977. (The House of Ariki has an advisory role on matters of land and custom, and it prepared papers on this subject in 1970 and 1977.) There seemed to be general agreement in the Legislative Assembly that the English legal system is often poorly suited to Cook Islands land tenure, and that it is a system which is open to exploitation by people well versed in English and technical legal arguments or by people who can afford to buy this expertise.

The lengthy Assembly debates aroused considerable public interest and awareness of the need for land reform. Subsequently, a Commission of Inquiry was formed under the chairmanship of Sir Charles Bennett, a New Zealander with wide experience of Maori land problems in New Zealand. This Inquiry appeared to have been shelved after the 1978 change in Government, and new policies can now be expected. There may be calls for further 'study' and review of the whole land-tenure system. Further analysis by outsiders must have low priority compared to the importance of encouraging Cook Islanders themselves to talk and write about their

own problems of tenure and custom. In this respect, seminars have been held at the USP Centre on Rarotonga, and a book was being prepared by the Institute of Pacific Studies during 1979.

To summarise, the land-tenure system, based on the now-fragile strength of the extended family, represents a precarious balance between the old and new forms. Further social change will compound the monetary and legal complexity of land tenure. As it becomes more necessary, and costly, to hire professional and legal services to obtain legal rights to land, many people will be excluded from the legal processes. At the same time, pressure on areas where there is a high demand is rapidly increasing the gratuities and rentals being paid. But professionals, business people, legislators and administrators, who are in the best position to foster change, are often not interested in doing so. Thus, land tenure benefits a small élite, while many people lose their ability to help adapt the system to suit their own goals.

3.4 Kinship and Social Relationships

It is important to recognise the close relationship between land tenure and kinship. Rights to one or more plots of land depend on an individual's kin group (kopu tangata). Kin groups can have a number of meanings to an individual, and Baddeley (1978:144-148) identified five interpretations that can be attached to the term kopu tangata, making a basic distinction between "cognatic" kin groups and kin-based "action groups". Her five categories are:

1) all consanguines - both living and dead,
2) a widely-based action group,
3) a more closely-knit action group,
4) a corporate group with shared land rights,
5) a group tracing common descent to a title.

I found Baddeley's categories are useful for identifying the different social contexts of kinship.

Kopu tangata, in its widest sense, can refer to all of a person's relatives (consanguines) both living and dead. With respect to an individual's ancestors (tupuna) this kin group is related to the lands of the kopu tangata. Whenever possible, dead are buried on family land, and the souls of the ancestors dwell on the land, sometimes manifesting

themselves as ghosts (tupapaku). An individual might relate to these ancestors in dreams - perhaps to a grandparent with whom they had a close relationship - and evoke their support in family matters and disputes. In this way individuals not living on their home island will continue to relate spiritually to the family land. Genealogies can be important for establishing a family's rights to lands or titles, and it is an important task for a senior member of the family to remember or record relevant details. Disputes may involve considerable debate, research into Land Court records or references to a tumu korero (an expert in lore, especially about titles). Information, both oral and written, is fluid and open to manipulation and alteration.

From this broad initial category of kopu tangata, an individual will distinguish an 'action group' of kin with whom he interacts intermittantly, especially during life crises, inter-island visits or travelling (tere) parties.

> Genealogical proximity is not the main factor determining membership in a kindred-based action group. Kinsmen who are distantly related may be members of the same kindred-based action group, while those who are more closely related may, because of infrequent participation, not be included in these groups.
>
> (Baddeley, 1978:146)

Occurrences for which this group might assemble or interact include funerals and mourning feasts (kave eva), weddings, twenty-first parties and haircutting ceremonies (held for naming of eldest sons). Members who do not assemble physically might interact by proxy, through gifts of food or money. Assembly will usually be centred on a feast (umukai), to which the kopu tangata will donate food and/or money and assistance. 'Donations' will be noted, remembered, or recorded for an appropriate reciprocal response by the family.

With increasing mobility through air services, visiting has become an important part of wider kin-based activity. In addition to many individual inter-island visits, members of a tere party from a village, school or church group will bring 'gifts' for their kin, who will respond with special attention for their own. Some complete tere parties are kin-oriented. For example, a group of Aitutakians with

relatives in Mangaia formed a visiting party to Mangaia. Mangaians with Aitutaki connections planned to respond to the reciprocal invitation. Individual kin visitors, perhaps seen very infrequently and sometimes never, will be treated in an appropriate fashion. Memories of visits and visiting parties can be of very long standing, and more than twenty years can elapse between reciprocal visits.

When the interactions in the above kin group become sufficiently regular and intense, a second action group can be defined. This is the close-knit kin group of an individual and relatives who live, socialise or work together, particularly on their own land. "The most important principle defining this group is frequent interaction on a regular basis..." (Baddeley 1978:146). The group can include spouse, parents, grandparents, siblings, children, adopted children and 'cousins' - classificatory siblings in each generation - and the group can be identified by the name of a senior member. This kin group may cover more than one household (ngutuare), but the household might not be limited to close kin. In addition to visiting members of the wider kin group, there may be people from outside the kopu tangata living in the household, including friends, boy or girl friends cohabiting with a member and participants with an economic relationship - including 'workers'.

The remaining two kin groups are those members of a kopu tangata who form a corporate descent group . They trace descent to a common ancestor (tupuna) with respect to either land or a title. An individual can belong to more than one descent group, thus tracing rights through a common ancestor to more than one set of lands or title. Chiefly descent groups provide the most common contemporary usage of the term ngati, using it as a prefix to the ancestoral name, e.g. Ngati Tinirau.

Within the whole kin system, individuals classify each other either by seniority in descent or by their activities and contributions in an action group. Descent lines are ranked by seniority (ibid.:149). Siblings classify each other according to their sex, those of opposite sex using one term for each other (tuaine/sister and tungane/brother) Siblings of the same sex, however, distinguish between older brothers or sisters respectively as tuakana, and their cadet brothers or sisters respectively as teina.

Wedding Group, Rarotonga, 19th Cent.

Village nuku, Atiu 1979.

An individual has rights in the kopu tangata of both parents, but parents will influence the kopu tangata in which a child has most interest by the intensity of their interactions in that kin group. An individual's rights "depend on the amount of participation by himself and his parents and grandparents in the concerns of the kopu tangata..." (ibid.:154) This sytem of seniority and participation, through fulfilment of continuing mutual obligations, has been keeping some check on the otherwise unrestricted demands for land rights by individuals, in all their possible kopu tangata.

Residence is usually virilocal, but there are numerous variations (ibid.:71-74). There can be social pressure against a husband who lives on his wife's land, although such residence may be necessary for economic reasons, especially when the couple originate from different islands. Couples usually take an interest in their lands not used for residence; they may plant them when convenient, or perhaps plan a house for their children or for retirement. Couples now locate their residence for employment and lifestyle, often preferring to live on Rarotonga using the wife's land, permissive rights or a leased house. Baddeley (1978:77) found couples preferred to live in Ruatonga - an urban tapere - for employment opportunities. Increasing investment in housing and agriculture further limits future mobility, undoubtedly placing pressure on land rights in areas of Rarotonga where there is intensive settlement.

Village social life can also influence residence choice. Baddeley (1978:54) for example, says that those people living in the more distant parts of the urban Ruatonga tapere - in the inland valleys - face less social pressure to join tapere projects compared to those living in the central part of the tapere, near to the meeting house. In the more rural area of Vaimaanga on Rarotonga, where I lived for a six month period, housing was relatively dispersed. There seemed to be less general social pressure for individuals to join village activities, and consequently there was less such activity. Social relationships were more likely to be guided by specific kin, economic and household activities. Community activities were centred in the nearby Titikaveka village and tended to involve a small core group.

On outer islands the many kinship obligations and close social control of village life persuade an increasing number of people to locate their residence away from the village setting. This desire may prompt people to emigrate from their island, but it also influences residence choice on the island. 'Modern' people, including government servants or entrepreneurs, often try to locate on the periphery or completely outside their village. Less restriction on behaviour, such as aquisitiveness or a desire to work on Sundays, is a primary motivation for this choice. Growers might wish to locate closer to their planting lands, facing fewer demands for time to be allocated to village and kin activities. The affairs and activities of the village (oire) are complementary to kinship activities. The village may relate, as in the Ruatonga example, to a single tapere, but in most cases each village is an amalgam of tapere and kopu tangata, especially through villages being relocated since European contact. Several contemporary settlements appear physically to be one village but are, in fact, a complex of villages when defined by social relationships: the five villages on Atiu, the village complex at Oneroa on Mangaia, Ngatiarua/ Areora on Mauke and the 'village' on Mitiaro are examples.

There is no direct relationship between the traditional vaka or ngati organisations and the modern village. The term vaka now refers to political and local government boundaries. The vaka of Takitumu, for example, is a political constituency and also has a vaka council made up of village councils. The people of the vaka who are related to land or titles may sometimes act as vaka tangata in the installation of a chief (Baddeley, 1978:130). In the installation of two new Kainuku Ariki title holders in 1979, however, donations to the feasts appeared to be guided by relationship to the respective chiefly families (kopu ariki). The two families involved disputed the title, and each installed their own chief. Some, but not all, people participated in both feasts.

Levels of participation in village affairs are influenced by length of residence in addition to kin ties, chiefly status or various types of achieved status. Both Baddeley and Stephenson have described village activities, with respect to Rarotonga and Atiu respectively.

From my own observations, I concluded that the main village activities revolve largely around the church and sport, with the latter undergoing a renaissance on outer islands. Dance troupes, tutaka and tere parties are additional activities.

Church activities include the ua pou, a village meeting after church to sing hymns and discuss the gospel and its relevance to everyday life. At an ua pou in a Rarotongan village, for example, the questions concerned the need for parental control of children, and discussion centred on the influence of young people (mapu) involved with bikie gangs in New Zealand. There was a fear expressed that young people returning from visits to New Zealand could perpetuate gang-type behaviour on Rarotonga. Choir practice of specially composed hymns (imene tuki) feeding of the pastor, Sunday school and entertainment of a visiting church group (tere tere) are all part of church life. It could be significant, however, that participation in church affairs is declining with social change. Whereas an ua pou may be a weekly event on Mitiaro, it was very irregular at Vaimaanga - one in six months - illustrating the differences between Rarotonga and a small outer island.

Perhaps the most important diversion from a weekend oriented around food cultivation, sport, family and church, is regular group drinking. This activity involves mainly males on outer islands, but on Rarotonga can often involve females as well. Lemert (1964) compared Cook Island drinking habits in 'bush beer schools' to other Polynesian drinking habits and found that the Cook Islands schools were relatively well organised and ritualised. This was a system which balanced older values with Christian and Western values (ibid.:369). Men in drinking groups recited genealogies, for example, reiterating and strengthening 'traditional' lore. Group work was organised, and informal methods of social control were implemented by the group. Lemert (p. 372) predicted that with changes in labour patterns, "heavy weekend drinking", "periodic indulgence" and "absenteeism" would become major labour problems. This prediction was very frequently true in the late 1970's. With the rapid increase in cash earnings and use of imported alchohol, in addition to increasing individualism and new cultural values, highly organised drinking has declined and is now being replaced by hotels and bars, 'disco'

and loosely-formed parties. Even on Atiu, where the groups are most highly organised, new forms of drinking are popular. There is consequently greatly reduced informal social control and little tie to established traditions in new drinking patterns. Both drinking and dancing are closely following imported models.

Parallel to this change is a decline in other village activities, especially on Rarotonga. 'Working bees', school projects and growers' associations frequently obtain little support. Support in each village tends to emanate from a core group of households, and individuals who maintain some status and authority in the old system, where prestige could be achieved from activity in, and contribution to, 'traditional' activities.

The most popular village activities appear to be those with an element of competition and inter-village rivalry. Sports such as rugby, tennis and netball are well supported. There is often competition in church activities, from hymn singing to comparison of collections. Dance troupes are readily formed for local competitions. Village inspections (tutaka) are conducted on a competitive basis. This inter-village rivalry is often matched by inter-personal rivalry and competition, although the latter is not always immediately obvious to an observer.

3.5 'Traditional' and 'Modern' Maori and Papaa

The decline in 'traditional' institutions such as the vaka and ngati has been fully documented in research. But of most concern to contemporary social policy and economic planning is the decline in the new 'tradition', whether it is the church, village or family. This decline is evident in a whole range of social conflicts between traditional and modern, Maori and Papaa, ways.

Baddeley (1978:16) comments on the existence of a 'traditional lifestyle' group on Rarotonga. They are "led mostly by elderly people who cannot or do not wish to participate in all the changes brought about by urbanisation". Traditionalists can include people of all ages and frequently their relatives. There tends to be more traditionalists on the outer islands. These people remain primarily in the 'subsistence'-production sector and maintain strong loyalties to the church, village/tapere

and family. They have extensive knowledge of genealogies, particularly with regard to either land or title claims, and also other 'traditional' matters such as Maori medicine, old songs, chants and lunar fishing and planting. They are also active in the church, at ua pou in village activities such as tutaka and informal social control, particularly gossip. Making this distinction between traditionalists and others is not to say that public servants or entrepreneurs have no knowledge of things Maori. People who are 'modern' can also be actively Maori, but if so, they experience a variety of interpersonal and mental conflicts, and this is the importance of the distinction between 'modern' (often translated as Papaa) and Maori

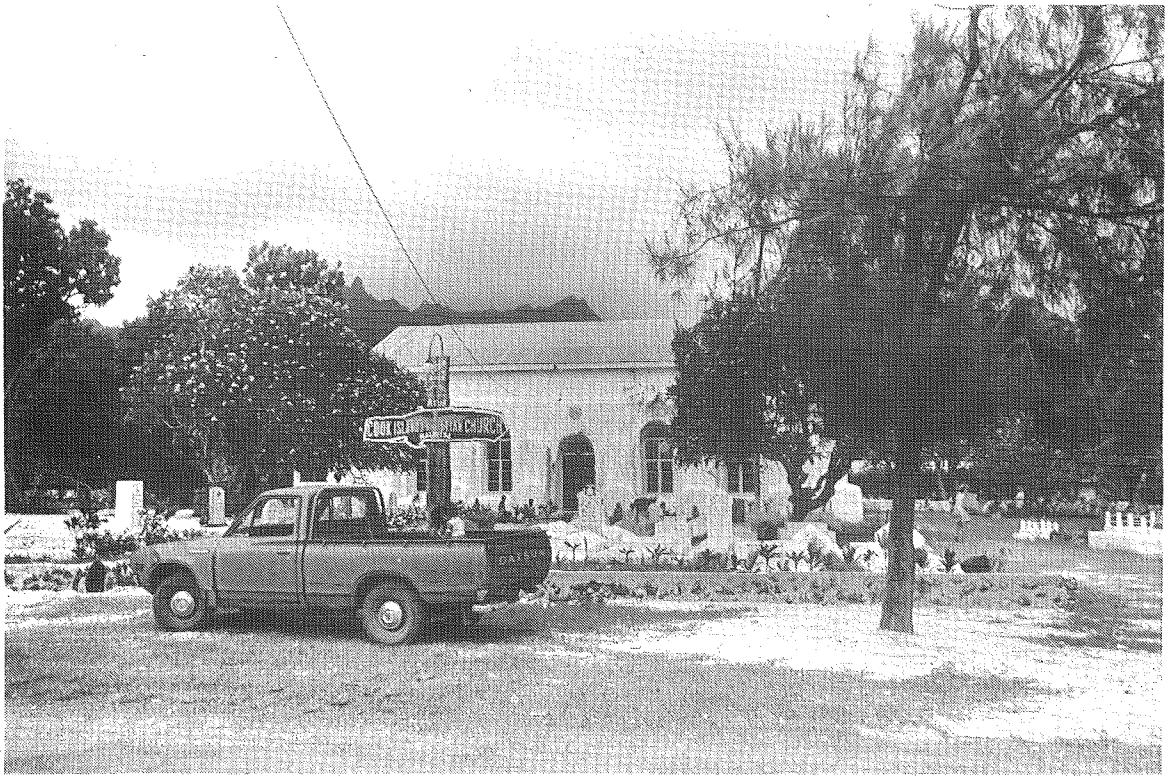
Women have an important role in the maintenance of 'traditional' or Maori ways. Few women have attained high administrative positions, established business enterprises or operated as successful growers. With the major responsibility for childcare and socialisation goes the task of maintaining kin networks. This leads to a desire to conserve and foster traditional ways. Women also undertake much organisation of feasts (umukai - see section 8.4) and are active in 'traditional' institutions of the church and village. Women are very important in carrying out informal social control. They are also closely involved with the maintenance of spiritual values and the preparation and use of Maori medicines.

The distinction between Maori and Papaa can apply in many ways. McKenzie (1973) and Baddeley have examined the continuing importance of both Maori and Papaa medicine. Of interest to agriculturalists are the distinctions between Maori and Papaa foods (see chapter eight) and Maori and Papaa work. In contrast to paid work for government, commercial or personal enterprises, Maori work retains importance and was frequently distinguished by informants. Maori work is tied to village and family obligations and status. It may involve building a Sunday school, helping a friend construct a water tank, picking a citrus plot or preparing an umukai. 'Rewards' do not relate readily to the monetary value of the work, but rather to the reciprocal exchanges and other obligations involved. The work, with a group atmosphere, is often distinguished as enjoyable. Food and liquid refreshment play a vital part.

The differences between Maori and Papaa ways can be viewed as part of an emerging class structure. Baddeley (1978:61) supported this thesis, pointing to "an embroynic type of class structure" on Rarotonga. There is a considerable variation in lifestyle between a successful entrepreneur or a highly-paid government servant and a labourer earning 75¢/hour. (Entrepreneurship is examined in detail in chapter five.) Those people with sufficient spending power will usually behave in a Papaa way, with a lifestyle to match. They can live largely outside the traditional institutions such as the village, church or even the extended family. Status and satisfaction are tied to the new social rounds that have developed. Obligations to the family can be avoided by leasing land and employing labour. This group have considerable power in the 'modern' society, holding most control in the public and business sector.

Changes in systems of authority are another source of conflict. 'Traditional' village leaders now have decreasing power. The church pastor and deacons, for example, used to have considerable power over 'moral' behaviour. The leader of the tapere (pu tapere) used to ensure that households planted sufficient food crops. Womens' groups (au vaine) were active in maintaining high standards of village, household and child care. Titled and family leaders have lost much power. New sources of social control are becoming important. The police force is being expanded rapidly with new resources, manpower and training based on New Zealand support and methods. Less formally, school teachers and government administrators often undertake leadership and disciplinary roles. Within the conflicting systems of authority, some leaders emerge with considerable power. This power can be sufficient to work against administrative plans and community wishes, posing problems for larger-scale organisation.

Most Cook Islanders are involved in social conflicts which result from extensive and rapid social change. For example, a very 'traditional' person might be involved in 'generation-gap' conflicts with kin over attitudes to land or family obligations. A 'modern' grower will be confronted with dilemmas and disputes. On Sunday, he might feed at his intensive piggery, attend church, pick and pack vegetables for airfreight and send some 'first fruits' to the village pastor. A public servant could have no time to attend an ua pou



Church, Rarotonga,1979.

Watching sports, Rarotonga, 1979.

or a village meeting, yet he will entertain certain visiting relatives to an umu lunch to maintain kopu tangata relationships. These relationships, with reciprocal obligations, may be important for protecting the land rights of his children. Many women now work in order to buy household goods, and these women may include younger girls and older household members who used to assist with chores and child minding. But besides working, a woman will have to cook for her husband and family, and perhaps a visiting tere party. So she will resort to using bread, tinned meat, and imported frozen chickens, purchased at the cost of her savings.

To try to unravel motivations and social behaviour in these circumstances is difficult. What to one observer may be a clear case of political nepotism, such as government officials collecting shellfish to entertain visitors, could be interpreted as an example of reciprocal kinship obligations. There is rarely a simple case of monetary 'maximisation'. Economic return, prestige, power, access to family lands, community support and everlasting life can all sway decisions about a 'production function'.

3.6 Small-scale Society and Administration

A basic conflict - one that is vital to development planning - is found in the difference between 'small-scale' and 'large-scale' social and economic relationships. This conflict is in many ways an extension of the cultural conflict between Maori and Papaa.

The complexity of behaviour in a small society subject to rapid change dooms simplistic planning of economic projects from the start. Any attempt to provide quick answers to apparent social and psychological constraints to a project is very likely to be inadequate. In planning and accomplishing agricultural change, aid administrators and expatriate personnel face, in addition to cultural differences, the basic problem of understanding that arises from the differences between predominantly urban societies and small rural societies. For example, social behaviour which appears on the surface to be a sign of cohesion or cooperation might indicate an easy path for new types of social and economic organisations based on cooperation. There are

specific programmes in the Cook Islands which contain examples of misguided, top-down planning of such organisations. The cooperative movement, land incorporation and growers' associations are all examples discussed in later chapters.

Anthropologists and sociologists who have studied small societies have reached some consensus on their nature. Benedict (1967:47) for example, said that small societies are defined by the relative smallness of "their total social field". But social relationships in such societies can be very complex. Small does not mean simple. Small societies are held together by kinship and economic relationships interwoven with individual and group rivalries for power and prestige. There are multiple roles and individuals have relationships with each other in more than one social context. But as Benedict (p. 49) indicated, "...a strong network of particularistic relationships does not mean social harmony"; there can be "intense factionalism". In the Cook Islands this factionalism is apparent at all levels: family, village and national-political.

Members of a small-scale community have many opportunities to interact with the same people in a variety of situations. As Baddeley (1978:59) has indicated, there may be considerable hostility between members of a kopu tangata through disputes over land or titles, but this situation may not be obvious in all the other activities in which these people will also interact, such as work, school, church, sport, community or political activities. This complexity applies to every sphere of social life. Rival politicians might be brothers or workmates, rival growers will sit on the same committee and different religious denominations in a village will perform together a religious play (nuku). Some families were completely split into political factions during the 1978 elections. In contrast, one Rarotongan family claimed it voted as a united block of over seventy voters.

In the small island societies, skills of avoidance, conciliation and informal communication (gossip and rumour) are vital. People are close physically and socially. Behaviour can never be taken for granted. Common, romanticised notions of outsiders about gaiety, generosity or friendliness, for example, tend to be meaningless. Gaiety or friendship may obscure conflict and rivalry. Apparent

generosity may reflect only one side of a reciprocal economic relationship. Gossip is a particularly important mechanism for regulating behaviour. Inadequate response to a reciprocal agreement will become the brunt of gossip, as will aquisitiveness and 'showing off'. Unsociable, immoral and sexual behaviour are frequently discussed. With social change and the breakdown of village life, however, these social systems are less effective. This is much more the case on Rarotonga than on the outer islands, where the only way to avoid fully such a system is to leave altogehter.

The main conflicts arising from changes to small-scale social systems result from the demands of larger-scale management and administration. As Benedict (1967:50-52) explained, large scale operations "require functionally specific roles". They depend on "universalistic" (usually Papaa) criteria for judging performance and achievement. 'Modern' social and economic organisation is often fundamentally different from old or existing systems. One way in which much conflict is avoided is the isolation of many 'modern' operations in the control of an expatriate. There can be valuable latent functions in maintaining expatriates in certain key areas of administration, business, education and agriculture.

Metropolitan-style bureaucracy and red tape are alive and well but doubly impenetrable through the addition of kinship, political and community ties which are mixed into the decision-making process. For example, 'demo' (Democratic Party) supporters assured me after the change in government that it was their turn to receive the loans and administrative positions. A grower will complain because the tractor operator gives priority to his friends and relatives. A Papaa will complain because his booking on an inter-island plane has been re-allocated to a rather large and immovable, flower-bestrewn mama.

In the small Cook Island communities, government services have often to be combined under one office and administrator. This was the arrangement on outer islands with the Resident Agent in colonial times, and more recently with the Chief Administration Officer (CAO). A central administrator has control over important services such as machinery operations or communications. Hau'ofa and Ward (1979:47)

maintain that this general type of administration can lead to improved coordination of services, and this is the case under a good CAO. However, centralised administration on an island can lead to power conflicts and breakdowns in communication between the administrator and specialised departments. This problem has probably increased as the roles and power of government departments have grown. Kinship, economic and political obligations and allegiances inevitably influence decisions over the allocation of government and development resources. This influence might be interpreted as 'corruption', but on the other hand it is also social behaviour that is essential to the prestige and social survival of an administrator in a small community.

With the use of improved radio communications, the present government is centralising decision-making in Rarotonga, and communication and coordination with Rarotonga has consequently improved - a vital requirement for matters such as the organisation of shipping schedules. At the same time, different departments/ ministries have more independence from each other on each island. Therefore community power structures have been altered. Leaders in different departments can exercise more power on the island, but less in relation to Rarotonga. As a result, there have been cases where the coordination and organisation of the picking, packing and barging of fruit, for example, diminished markedly.

Overall there tends to be a paucity of managerial and administrative skills on the outer islands. Disruptions to power structures, through administrative reorganisation, new organisations such as growers' associations, or political change can all affect ongoing development schemes, especially when there is inadequate administrative training and other support. In this disrupted system of authority, new types of leaders emerge. These are people who are skilled at operating in both the old and new systems. In some cases these are the same people discussed under brokerage and entrepreneurship in chapter five. The behaviour of these leaders is at times blatantly manipulative, with advantage taken of the inherent conflict between the Maori and Papaa systems. These leaders can use both family and village relationships and their ability to operate within the new administrative mechanisms, such as radio

communications, As a result these leaders often satisfy short-term and limited objectives that benefit neither the large-scale operation nor the overall welfare of the small community.

In conclusion, social relationships and behaviour in the small island societies have become more complex and unstable as social change has occurred. There are numerous conflicts between 'traditional' and 'modern' ways. Many of the mechanisms of small communities remain while the demands of larger-scale management and administration are increasing. The important external forces outlined in chapter two are an integral part of the change and conflict that has developed internally. In the following chapters I will examine the relationships between this unstable social and economic system and the development of environmentally unstable agricultural production.

CHAPTER FOUR

COOPERATIVES AND GROWERS' ASSOCIATIONS

New types of social organisation are important to rural development. In this chapter and the following chapter (five) I will examine aspects of the social and economic organisation that has developed alongside increases in commercial agriculture. Much of the economic change that has occurred in the Cook Islands has been based on trading firms and commercially-minded growers. This development is discussed in chapter five. There has been, however a long-standing and widespread demand for more general economic advancement. To achieve this objective, there is a continuing need for growers to unite into organisations that can be active in coordinating production, marketing, handling credit, agricultural servicing and lobbying first the New Zealand and then the Cook Island Governments for better prices, improved shipping and other aid and support.

In this chapter, I look first at the early associations, the emergence of the nationalist politics of Albert Henry and his Cook Islands Progressive Association (CIPA), and Henry's 'people's cooperatives' (4.1). In section 4.2,I provide an analysis of these early social movements as responses to a perception of relative deprivation. The response in turn, of the NZ Administration to this deprivation and the demand for new economic organisation is examined in section 4.3, in which I describe the development of institutionalised cooperatives. In section 4.4,I discuss recent moves to provide the growers with more autonomy in their operations compared with a situation where most agricultural organisation was under state control. However, local growers' association, the organisational base for this change, provide a weak framework (4.5). A conclusion, in section 4.6, is that conflicts between social, economic and political functions, and Maori and Papaa perceptions, should not be under-estimated during planning of new organisations.

4.1 Early Growers' Associations, Cooperatives and the CIPA

In studying growers' organisations, it became clear that historical developments in both growers' associations and the now-defunct cooperative movement were important to understanding present events and their likely outcome. This historical analysis of growers' organisation is inexorably linked to an understanding of political developments, which have remained an important influence on both social movements and government programmes.

Couper (1968:203) has discussed the earliest recorded 'cooperative' activity in the Cook Islands and used the term "proto-cooperatives" to describe the new economic organisations. He considered that this early cooperative activity lay, by definition, between a cargo-cult type of activity and "modern village cooperative societies". Couper criticised any view of early economic development which provided a picture of "passive" islanders. He noted that their own continuing exchange system served to re-distribute European goods, and also that "they made repeated attempts to participate in the commercial trading system of the Europeans and even to usurp entirely the role of the alien traders" (ibid.).

Couper said that during the 1890's village leaders on several islands attempted to restrict the new power of the European traders. The leaders expelled traders from both Mangaia and Aitutaki, and people were required to trade with the "native-owned market houses" controlled by the ariki. The chiefs also imposed a restriction (raui) to fix the minimum price at which produce could be sold to traders - otherwise unrealistically low prices might have been accepted. Some of the late-nineteenth-century local organisations were therefore operating on a cooperative basis as "full trading" companies dealing in copra and other goods. This business was in competition with the established traders, and Couper considered that the missionaries probably sided with the chiefs against the traders (Couper, 1968:265).

An interesting aspect of this rival trading was the attempt to operate inter-island schooners, but this proved the "least profitable of the Cook Islanders' trading ventures". Couper noted that this

early operation of inter-island shipping acted as a "counterveiling power to the companies, and they were valued as such by the islanders" (ibid.). But

> The European companies in the Cook Islands had, however, the great advantage of controlling almost all the import and export channels. Whereas local schooners could make the voyage to Tahiti they seldom attempted to reach Auckland, the main market and entrepôt. The companies were also in the position of controlling the supply of cropra bags and fruit cases to local trading groups, and they finally formed a price ring in order to dictate terms to the islanders.
>
> (Couper, 1968:266)

The Maori perception of relative deprivation in control of these new economic enterprises has been an important aspect of all the economically-oriented collective movements that were subsequently formed. This perception has focused several times on the question of control of inter-island shipping, which has been seen as a particularly important means of access to improved trading conditions.

During the early part of the twentieth century, prices and irregular shipping were the major constraints to agricultural exports, which comprised mainly citrus, bananas and copra. Wilson (1969:37) stated:

> The history of the trade is riddled with petitions from the Cook Islands growers and pleas from the Cook Islands Administration to the New Zealand Government for protection against outside competitors and for better shipping connections.

Makea Ariki led a petition in 1904 for better prospects of future prosperity, and the New Zealand Administration itself recognised the importance of adequate and cheap shipping (ibid.:37).

After the First World War the European traders began to monopolise the export trade. Fruit prices fell, and by 1919 the situation on Rarotonga had reached a crisis, with prices as low as two shillings per case of fruit. Returned Maori servicemen rioted and a new growers' association, the first Cook Islands Progressive Association, was formed to lobby for improved prices and more support for agricultural producers. The Administration supported the growers, who obtained 10 shillings per case and better, positive reinforcement for collective action.

The 1920's was a period of relatively high exports. Several cooperative-type organisations and associations were formed. They included the Rarotonga Fruit Company, which was organised to market fruit and supported by the Administration. The Cook Islands Native Association was begun in 1924 to market produce and apparently ran successfully until its European manager left in 1940. Maude (1951:2) reported that several other societies of a cooperative type were formed prior to 1936. They were all concerned with marketing and shipping and ran with variable success, management and administration being key problems.

The 1930's brought a period of economic recession with low prices and poor shipping in addition to new diseases in the ageing citrus trees. In 1937 the new Labour Government introduced the Cook Islands Fruit Control Regulations, which allowed the Government to control the marketing of all exports except tomatoes under the 'Fruit Control Scheme' (Wilson,1969:41). The new scheme resulted from a visit by a New Zealand parliamentary delegation in 1936, who found agriculture in a poor state, excessive control by the traders, and a low overall standard of living (Hancock, 1979:55-56).

The parliamentary delegation took place in response to petitions to the New Zealand Government in 1935. The growers on Rarotonga had formed an association called the Rarotongan Growers Association. This group sent a delegation to New Zealand under the leadership of Vakatini Ariki. Stone (1971:11), noted however that there was also an alternative delegation led by Makea Nui Ariki, revealing the "presence of factionalism that was to characterise local politics in the post-war period". This kin-based factionalism continued in the 1940's with the growth of the Cook Islands Progressive Association (CIPA) formed by Albert Henry. Makea Nui Takau, and later her successor Makea Nui Teremoana, and other mataiapo and members of the respective kopu ariki, continued to form a core of opposition to the CIPA and later the Cook Island Party. These factions between descent groups were based on disputes over land and the accompanying titles rather than 'politics'. Gilson (1952:367) described for example, how the Ngati Uritaua supported Vakatini Ariki in 1936 against Makea Ariki because of a dispute between the two groups over water-front land at Avatiu harbour. Nevertheless, there was still widespread support for the new CIPA after the Second World War in 1945.

Stone (1967 and 1971) has provided a detailed history of the origins and activities of the Cook Islands Progressive Association prior to self-government in 1965. Stone traces the origins of the Association to the dissatisfaction arising during and after the presence of the American armed forces on Aitutaki in the Second World War. Dissatisfaction with the NZ administration also arose on Rarotonga at this time. Frustration at a whole range of economic failures due to the War and preceeding depression - low incomes, poor agricultural productivity, prices and marketing; inadequate shipping and a general lack of social and economic development - were the main catalysts for the new Association in the Islands. At this stage, "The Association's immediate ambition was to establish cooperative trading stores and to obtain a ship" (Stone, 1971:D2).

Stone identified two 'developments' that activated the movement into a political organisation (1971:D5). The first was unrest during 1945 among labourers working the phosphate deposits on Makatea Island in French Polynesia. The second, in January 1946, was a successful strike for higher wages by the wharf workers on Rarotonga. Also vital to the political arm of the movement was the establishment of a CIPA branch in Auckland. In addition to working for the welfare of Cook Islanders in New Zealand, this branch was active in lobbying for the Island members. The Auckland branch was important primarily because of its dynamic leader, Albert Henry, and secondly because of its support from militant left-wing ('communist') trade unions in Auckland, who were involved in internal wrangles within the New Zealand Labour Party. The Association's economic objectives for the Islanders were mainly improved incomes and better shipping. Nationalism became an integral part of the organisation's development policy and its primary political thrust.

The Island Administration remained wary of the CIPA connections to the Auckland unions and in fact encouraged on Rarotonga an alternative union, which was eventually established in 1946. Stone has noted (1971:D7) that in this objective they were assisted by the political factionalism on Rarotonga, where a number of traditional leaders were against the CIPA. The split among the leaders continued to be mainly kin-based, as before the War.

Meanwhile Henry made visits to Rarotonga to build support for his schemes for social and economic development. In 1946 his Association reported to the New Zealand Government with

> ...resolutions requesting improvements in health and education services, conditions of labour, shipping and trading, and complaints concerning prices charged by Cook Island traders. In addition, the Association attacked the government-sponsored citrus replanting scheme on the grounds that it entailed individualisation of land ownership in opposition to traditional practice.
>
> (Ibid.:D9)

By his 1947 visit, Henry had begun to clarify plans for a cooperative which would organise and encourage the planting of household food-crops, marketing of produce, establishment of a citrus nursery and replanting operation, importation of staples for minimal profit, workers' welfare and "preservation of Maori culture" (Ibid.:D10).

During 1948, antagonism between the CIPA and the NZ Administration's union became open. There was picketing at the wharf, and a squad of police was flown in from New Zealand to assist (see Stone, 1971:D11, and Roth, 1977 for details). Militant union opposition had been suppressed, and Henry turned his attention to developing the cooperative movement.

As marketing of citrus was under Administration control, the CIPA concentrated on copra and pearl shell. Both are non-perishable, but they require transportation from the Northern Group where they are mainly produced. So Henry led a CIPA delegation to Prime Minister Fraser and managed to convince the NZ Government to support the Association in purchasing the vessel La Reta for inter-island trade. A loan of eleven thousand pounds was made through the State Advances Corporation, with the ship as first mortgage. The balance of the purchase price of thirteen thousand five hundred pounds plus a small sum for working capital were obtained from three-pound shares sold to each member. The Cook Island Producers' Cooperative Society was registered in Auckland in 1949 to operate the business.

> The Government decision no doubt took the Cook Islands Administration by surprise, but for the islanders Henry had made good his intention to procure a ship for trading under Maori control.
>
> (Stone, 1971:D13)

The importance of Henry's move should not be underestimated. He had provided what many people had long desired as a means to gaining greater economic prosperity.

The La Reta and the cooperative society were initially successful. Inter-island business was good; importing and retailing expanded, although exports were slow to increase. But problems also arose rapidly. The cooperative enterprises were in direct competition with the established importing and exporting activities of the trading firms. Management was weak. Stone mentions unrealistic payments made for produce in order to compete with the trading firms, excessive extension of credit to members and free transport of passengers. There was no working capital, as share money went towards purchasing the ship. Maude (1951:4) commented critically:

> The society was fore-doomed from the start: too ambitious in conception, managed by a visionary demagogue whose idealism was untainted by business ability, the leaders consumed their time in traditional Polynesian oratory while the vessel was engaged in unproductive touring.

Nevertheless, support grew and many ambitious plans were formed (Stone, 1971:D14).

The end was quick. In early 1950 the La Reta went to Auckland for an overhaul. The Society's income and level of activities were low and debts could not be covered. The ship-repair firm took a lien on the ship, and the Society went into receivership. Henry applied to the NZ Government for support, and even expansion of the Society's activities, but without success, and the Society was dissolved. As Stone has indicated, the new National Government was less than enthusiastic about supporting the Society.

> The new National Party Government in the main carried on its predecessor's policies for the territory, but F.W. Doidge, the new Minister and a notable opponent of 'Socialist muddling', was of a different ilk from Fraser.
>
> (Stone, 1971:D13)

Subsequently, in 1951, H.E. Maude of the South Pacific Commission investigated the potentials and problems of the Cook Island cooperative movement. He noted many of the problems which existed to hinder a development by the Administration, particularly the potential conflict between the Government cooperatives and the existing movement.

On reviewing the events that occurred, Stone points to the 'alienation' of many Cook Islanders from the Administration and its future schemes, including cooperatives and economic development in the islanders' own terms:

> ...not only had the leadership been alienated but many of the members, for whom the only thing that was clear was that 'their' ship had been taken away from them.
>
> (Ibid.:D18)

4.2 Analysis of Social Movements

Organisation of cooperatives was the Administration's response to the social movements of the 1940's, including the Cook Islands Progressive Association. Before describing this response, I will analyse further the spontaneous movements, which, like their predecessors, were aimed at economic development. Deprivation, relative to New Zealand and to past prosperity in the Islands, was a major cause of these social movements, which became both nationalistic and concerned with obtaining a measure of economic self reliance. Control of trading, especially where the large trading firms had gained excessive power, was a principal aim of the CIPA and prior organisations. Ownership and operation of inter-island and inter-territorial shipping was frequently perceived as a solution to these trading problems.

While ships provided both a real and symbolic aim for the post-war movements, leadership was the key to their organisation. Charismatic leadership from Albert Henry was vital to the CIPA. Maude (1951:2) critically evaluated Henry's leadership:

> A persuasive talker with in some respects a genuinely idealistic viewpoint, he is nevertheless essentially a visionary and as such a danger to his fellow islanders.

Later in his report, Maude (p. 19) made this comment:

> The faith of the people is still in Mr. A.R.Henry, though it is a faith built not on logic but born of the sense of frustration which permeates Cook Island psychology today (cf. the reports by Sir Charles Hercus and other recent observers). In many ways it seems a sophisticated version of the "cargo cult" of more primitive island communities; with its mystical faith that all the material prosperity of the European can be obtained if the people only follow implicitly the dictates of their leader (the "Messiah" of other areas).

Maude did, however, recognise that the CIPA movement had many elements conducive to the formation of self-reliant economic organisations among Maori people. He reasoned that any attempts to absolve the movement would be unlikely to succeed, as the movement "still crystallises the Cook Islanders' hopes for economic betterment". He also considered that the demands and potential of the movement had to be meshed with any new cooperative organisations or else there would be conflict between 'government' and 'people's' cooperatives (ibid).

A further perspective on Henry's early leadership of the CIPA can be gained by noting his contacts with regenerative social movements among New Zealand Maoris. In June 1945, Henry led a delegation of Cook Islanders to see 'Pat' Potter of the Auckland District Labourers' Union to seek support for a protest against wages paid to Cook Islanders on Makatea Island. This contact led to a close relationship between Henry and Auckland trade unionists. Roth (1977:176) explained that Henry made this contact with Potter on the advice of Te Puea Herangi, the Maori princess from Waikato. Te Puea, who was very active in organising 'self-help' projects among New Zealand Maoris, appears to have taken a keen interest in the problems of the Cook Islanders. There were continuing contacts between the CIPA organisation and the Waikato Maoris. Of greatest interest is the visit of Te Puea to Henry's home island of Aitutaki in June 1947. King (1977:230) has recorded that Te Puea's arrival in Aitutaki was made in exciting circumstances. The 'signs' surrounding her visit led a welcoming orator to explain that Te Puea must be a returning descendent of Ru, an Aitutaki folk hero who was responsible for giving Aitutaki its original name of Te Araura before leaving for Aotearoa (New Zealand).

There was clearly a widespread demand for social change in the late 1940's, a demand strongly founded in the relatively poor economic situation that prevailed. While Henry's is the best-known charismatic movement of that time, there was another social movement recorded as a "cargo cult" by Crocombe (1961). This movement in 1947 was based on a woman taunga from Atiu Island. She had a dream, on Rarotonga, in which two spirits told her about a ship that would travel to a marae site which she should prepare on Atiu. The ship would be loaded with coins and tinned beef. A marae was duly built by thirty people, and various rituals were conducted by the taunga. According to Crocombe (1961), a baptismal ceremony was held,but one man refused to participate in the ceremony, and no ship appeared. Recent informants reported that

they did not agree with some reported details, such as the baptism, and argued that the failure of the ship to appear may have been due to a dispute between the two spirits involved. Participants were, however, reported to be dressed in white - the traditional dress for church activities. We can only guess at the relationships between the CIPA members who were active on Atiu at that time and the cult activities. Kin-based rivalry could have been important.

Rituals within the Christian church and interactions with tupapaku (ghosts who inhabit the po - afterworld) remain important to most Maori people. As Baddeley (1978:238) stated:

> Living people, in particular ta'unga, can manipulate the tupapaku, but this is not possible with the Christian God, to whom one may only make supplications.

Henry was adept at using the church as a base of support and spiced his speeches with biblical quotations. The Atiu cult was different in its involvement with manipulation of ancestoral spirits to achieve worldly benefits; but the importance of additional church rituals, and thus supplication for the cargo goods, is not clear from the information available.

Burridge (1969) has provided a millenarial explanation for the formation of Pacific cargo cults - including the Atiu cult. Both the social movements described here had millenarial characteristics, especially in their involvement in the re-ordering of ideas about power and money. Following Burridge, the 'aircraft situation' shows a belief in power outside current comprehensions. In the Cook Islands cases, 'ships' were perceived as the means to regain local 'control' either by Maori or Papaa methods. Perhaps the Atiu cult represents a movement based on a prophet who gained inspiration in very traditional (Maori) terms, whereas Henry was a "new man" who could operate in both Maori and Papaa domains.

To trace the historical background very simplistically, there were massive social and environmental changes resulting from the arrival of the missionaries in the nineteenth century. A new ecological system was built around the churches and villages. Social order was based on reciprocal exchange, part-time specialisation in a limited cash economy and re-structured positions of power and status. Economic depression, followed by World War II, brought poor social and economic conditions,

and American troops. By the late 1940's, there was a major re-ordering of ideas about power, as represented by the nationalist movements, and money, as demonstrated in the introduction of new agricultural projects including the Citrus Replanting Scheme.

Even in the late 1970's most people found great difficulty in understanding the powerful machinations of the external economic system. 'Money' has become an increasingly important new measure of much social behaviour and there has been continuing change in the social system. Several of the new social movements built around growers' associations (see 4.5) continue to have millenarial elements, especially where these movements result from a perception of economic deprivation. The Arorangi Association, for example, is reminiscent of many aspects of Henry's people's cooperatives, and it would be very hard to deny the symbolic importance that pineapple development has held for economic advancement on Mangaia. But before examining these contemporary developments in detail, I will discuss the response of the Administration to the earlier social movements.

4.3 The Cooperative Response

Worsley (1971:8) stated that the cooperative ideal is the participation by all members, whether the cooperative is oriented to production, consumption or credit. He also considered (p. 36) that planned cooperatives usually obtain general institutionalised support, while spontaneous cooperatives are likely to cause hostile reactions from the 'establishment' of landowners, money agencies and traders. The cooperative organisations that were established by the Cook Islands Administration during the 1950's were distinguished by lack of full participation and cooperation among the village members. The cooperatives experienced a series of conflicts due to their institutionalised nature and the continuing antagonism between factions in the community.

In 1951, H.E. Maude of the South Pacific Commission completed a report on cooperatives in the Cook Islands for the NZ Department of Island Territories. The NZ Administration saw cooperatives as a possible development programme for encouraging new economic organisations and attitudes. Great hope was attached to the potential of the

cooperative movement as a means to raise agricultural productivity by encouraging the so-called 'cooperative' nature of the Maori people. At the same time, the incentive to earn money was expected to increase through the increased possibilities for spending it at the cooperative stores.

Maude stated four basic conclusions with respect to cooperatives and considered that they are "as valid in the case of the Cook Islands as for any other tropical territory"! Maude stated:

> As a general rule native races take far more readily to cooperation than Europeans, since it represents an easily assimilable transference to the economic sphere of their own communal way of life (this, incidentally is especially true of the Polynesians);
>
> (Maude, 1951:6)

Maude's other three conclusions were that, given a low standard of economic education, the cooperatives would require active government assistance, suitable legislation, and a good registrar.

Maude's idea that "the whole mode of native life dictates" cooperative activity was a basic, and important, misconception. The cooperative principles of democratic control and financial cooperation are very different from those that operate in a kin-based island village. A kin-based system of reciprocal obligations and exchange is an essentially different type of economic organisation from a corporate organisation based on a monetised economy.

Maude did, however, foresee some of the difficulties that the new organisations would face (pp. 11-12). These were the need for good administration, the need for basic economic education, the potential for conflict with established trading firms, and the need to develop the movement strongly on a foundation of small, village cooperative societies. He believed that federation, wholesaling and centralised credit were developments which could follow on from a sound beginning. Maude (p. 19) also foresaw that it was possible

> 'Government cooperatives' and 'peoples' cooperatives' will be formed, and spend their time in mutual conflict and recrimination.

The cooperatives remained basically a scheme of the Administration and they depended heavily on the appointment of a suitable expatriate registrar to gain momentum. Mr. J.L. Noakes was appointed in 1955, and the Cooperative Societies' Rules were instituted. The Registrar became part of the Department of Social Development, which was established in 1956.

The objectives of this new department were stated (Stone,1968:291) as being:

> 'to promote community life in the villages, to provide opportunities for the training of leaders and to develop a sense of responsibility in the management of their own affairs'.

The aims appear laudable, but the activities were paternalistically organised and based on Papaa models. In addition to the cooperatives, activities included adult education provided by one expatriate, the establishment of village 'community' centres and the formation of branches of Country Womens' Institutes (ibid.:292).

The impetus for these developments originated from the historic report by Belshaw and Stace (1955) which laid out a programme of economic development for the islands. Belshaw and Stace (pp.29 and 153-156) saw cooperatives as being among "the most important means by which the people may combine together to increase production, income and general welfare". Belshaw and Stace considered that the appointment of a suitable cooperative officer and adult education and information services would be vital. They supported the idea of a school cooperative programme and provision for Maori field officers and officer training. Cooperatives of various types were envisaged, including cooperatives for land development, agricultural production, processing and marketing; building societies, credit unions and thrift societies; school and teacher cooperatives and consumer cooperatives - when effective guidance and supervision was possible. A central cooperative development bank was envisaged as a future move to provide an 'apex' institution for financing the movement from its own funds (ibid.).

Like Maude, Belshaw and Stace predicted that rapid expansion of cooperatives, without adequate training of field officers and leaders and more elementary education programmes, could "lead to disaster, setting back the prospects for a generation". They advised that particular caution should be taken with consumer cooperatives, "partly having regard to the sort of pressures which exist in Maori society", and partly because of the likely opposition from trading concerns with a vested interest in undercutting such cooperatives (ibid.). Overall, Belshaw and Stace placed considerable emphasis on the need for supervision and protection by the NZ Administration, and training and education in cooperative principles. The new organisations were far from 'natural' or spontaneous and would require many 'top-down' inputs to survive.

The cooperatives made rapid initial progress, as described by Stone (1967:294-5) and recorded in annual reports by the Cooperative Department to the CI Legislative Assembly. Village thrift and loan, production and marketing, trading, and school savings societies were started throughout the Group. In addition, a public service thrift society joined the organisation. A cooperative bank was later started to provide a central financial facility, and a wholesale society began to supply the cooperative stores.

There was always a shortage of administrative skills. Some management ability was evident in the central committee of the various organisations, and many of the men involved are active in government and administration today. Although there were educational programmes, particularly in schools, economic and administrative skills were inadequate at the village level among the bulk of the members. The Cooperative Department itself suffered from a lack of trained local staff and a high staff turnover. Therefore, the central problem was a lack of understanding and knowledge of the new economic organisations based on money and credit.

Liquidity problems arose as demand grew for goods and credit at the cooperative stores, while agricultural income fluctuated. Poor record keeping meant that funds went 'astray'. The trading companies grew and a commercial bank began operating in 1970. Eventually, severe financial pressure on the cooperative bank and the wholesale society brought liquidation in the mid-1970's.

Some of the problems faced at both village and national levels were political. The CIPA people were always suspicious of the new scheme. Uncertainty and conflict were therefore inevitable and these compounded management problems. Stone (1967:295) noted that from the start any progress in establishing cooperative societies was made "in the face of opposition from the CIPA which regarded the movement as a 'Government cooperative'". The CIPA leaders suggested that the Administration wanted to keep the Maori movement under control to protect "the vested interests of the Administration and the European traders" (ibid.). Also, Henry started a new Auckland-based trading organisation called Polynesian Agencies "which was held to continue the true tradition of 'people's' cooperatives" (ibid.). Noakes tried to persuade people to "put aside their prejudices". His main support for the movement, however, came from public servants, who had income to save as well as some business acumen (ibid.:296). The Public Thrift and Loan Society was one of the most active societies, and government servants were important on management committees.

On a national level, after 1965, the CIP government - based firmly on the CIPA organisation of Sir Albert Henry - left the cooperative organisation to itself. Many of the people who eventually formed the Democratic Party were active in the cooperative movement and, in particular, the Public Thrift and Loan Society. Financial support, either from the Government or aid agencies, was not forthcoming when it became vital.

Some of the strongest criticism of the CI Government for their failure to provide adequate support for cooperatives came from Mana Strickland. Strickland, a teacher, had been active in cooperatives from the start and chaired the Cook Islands' Cooperative Union, which was begun in 1958 as a cooperative bank to centralise savings accumulated by thrift and credit societies (Murray, 1960). Strickland was Minister of Education in Henry's first cabinet but became increasingly disillusioned with the style of Henry's government and the policies being followed. In 1968 he delivered a paper to the ANZAAS Congress in Christchurch. The paper contained a blow-by-blow critique of the Henry Government's failure to fulfill the many programmes laid down in their election platform.

Strickland (1968:23) strongly criticised the Government for failing to provide adequate support for the cooperatives. He stated "that despite the fact that about half the total expenditure of the department went to salaries, etc. of two imported officers", audits prepared for the society committees were in arrears and incorrect and the committees were operating on inadequate financial data.

> The result of these incidents was that the reputation of co-operatives in the three most important villages of Rarotonga sank to very low levels with quite a few leading members elsewhere being disgusted with the situation.
>
> (Ibid.:24)

Strickland (p. 24) also criticised the lack of any coordinating cooperative council

> to act as the connecting link between the now scattered Co-operatives, particularly in matters of co-operative education, staff training supervision and democratic representation.

Finally, he criticised the Government's failure to assist with "production and marketing" and cited, for example, an instance where the then Government in fact urged that established copra-drying kilns on two islands should be taken out of cooperative control.

Strickland resigned from the Government and was active in forming the new United Cook Islands Party, which eventually became the opposition Democratic Party, and then assumed the Government in 1978 under the leadership of Dr. Tom Davis (now Sir Thomas). By this time cooperatives were virtually extinct. As predicted by Maude and Belshaw and Stace, the problems of administration, economic naievity and political conflict had been great, and they could not be overcome. In many ways the approach to cooperation had been simplistic and ill-founded.

Nevertheless, early supporters of cooperatives could not have envisaged the many economic, social and political changes which occurred. In retrospect, the cooperatives were an integral part of the rapid growth of a monetised economy from the early 1950's. Many new economic attitudes were developed. Imports escalated, and a large number of

people moved into employment outside the agricultural sector. Business skills increased and are manifest in the active 'entrepreneurs' today. But of most importance are the lessons which should be learnt from the failure of this administrative plan, for the present encouragement of growers associations involves another top-down policy for establishing new agricultural organisations and infrastructure.

4.4 'Stand on our Own Feet'

By 1977 it was clear that agricultural production was falling rapidly with a continuing loss of confidence among growers. The system where the government carried out most servicing of crops, particularly under the Citrus Replanting Scheme, had clearly failed. Attempts during the 1970's to expand banana production on Aitutaki and pineapple production on Atiu as almost totally government ventures had also failed. Therefore, policies were being conceived and discussed at administrative and government levels which would give growers more responsibility for production. The Primary Produce Marketing Board (PPMB) began to support growers' associations as organisations which might provide agricultural infrastructure under grower control.

So, early in my field research the subject of growers' associations became a clear topic for a case study. I pursued this topic through interviews with key people in the origins of the movement at a national level. I also interviewed leaders and members of particular associations and observed their various activities: attending meetings, field days, and tutaka, for example. Two Growers' Conferences that I attended in 1978 and 1979, were key foci for the development of contemporary associations and the concept of a National Producers Federation. Discussions and papers presented at the conferences provided useful material.

Evidence for the possibilities of reviving the growers' associations yet again had been provided by the active Mangaia Growers' Association (MGA). This association was being vigorously promoted on Mangaia and Rarotonga by a European grower, who was married to a Mangaian woman and cultivating a comparatively large pineapple plantation there.

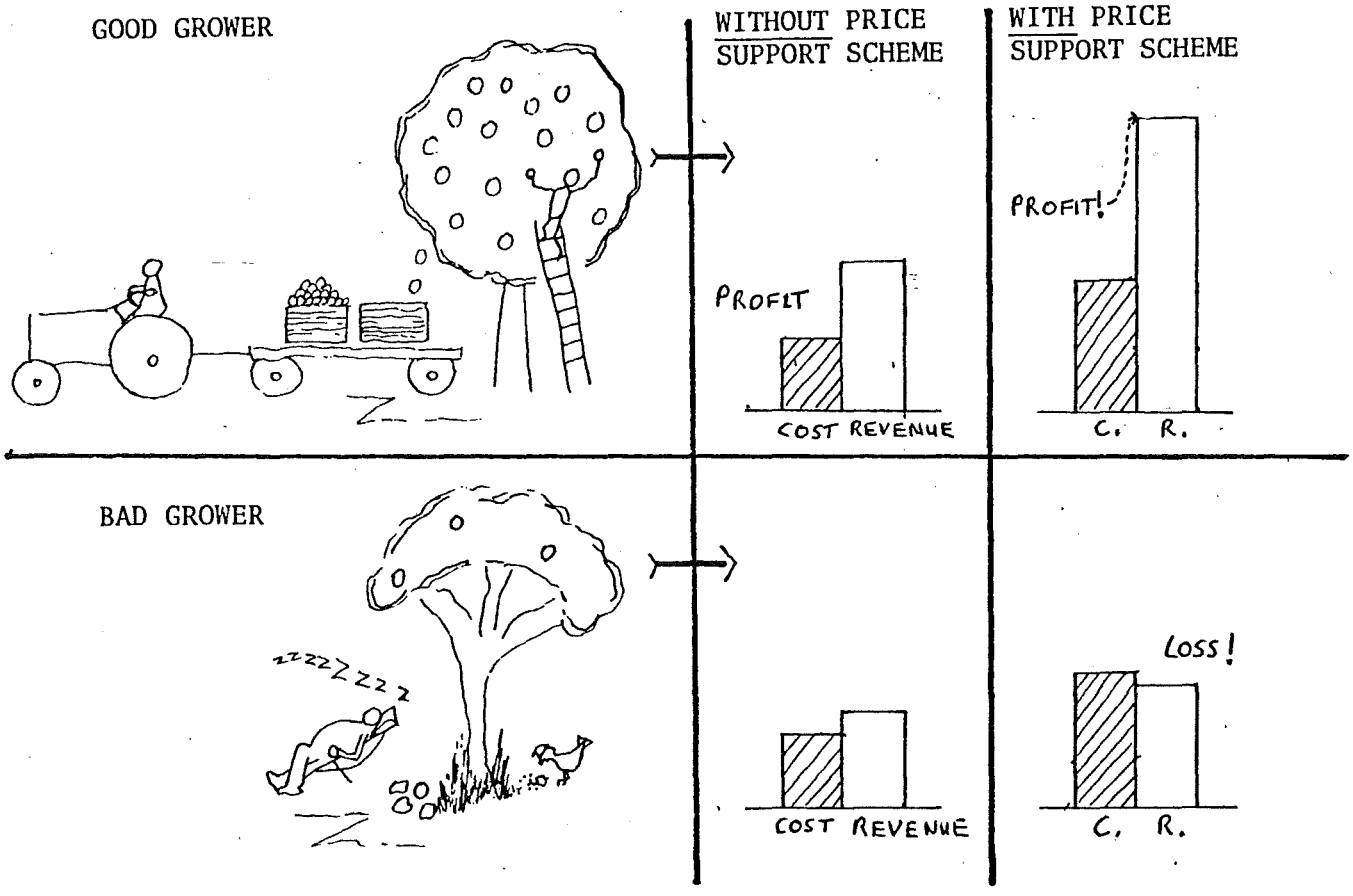
The MGA were active in attracting support for their main crop, pineapples. Problems they dealt with included inadequate prices and price support, poor payment systems, handling and freighting losses and inefficient crop servicing. In 1977-78 they took over administration and machinery operation from the PPMB and Ministry of Agriculture respectively. Furthermore, they employed a manager, office and field staff and their own extension officer, and hired lawyers and accountants. Some of the problems this organisation has faced are described in the next section (4.5).

During 1977, the PPMB actively promoted growers' associations through a new position of Growers Advisory Officer. The officer was encouraging the establishment of associations and provided advice on legal and administrative problems. The officer also acted as a liaison between the Board and the associations. Both the Board and associations were involved in the Annual Growers Conference, which was run by the Board on behalf of the associations. During 1977 the PPMB Chairman was enthusiastic about the development of the associations and commented officially that the improved coordination between growers "may result in the formation of a National Society" (PPMB, 1977:4). At this stage officers of the Board envisaged that the associations could take over many of the servicing activities then conducted by both the Board and the Ministry of Agriculture, such as inspection and packing, administration of payments and credit, crop management, tractor work, spraying and fertilizer application.

Also important in the promotion of associations was the input from a new unit in the Ministry of Agriculture. This was an Agricultural Planning Unit (APU), which was formed around three agricultural advisers from The Netherlands. These advisers had expertise in agricultural economics and planning, farm management and agricultural statistics. The policies that they were very active in developing were embodied in a series of papers presented to the 1977 Annual Growers' Conference. The papers outlined a complete reorganisation of agricultural organisation and servicing. The basic aim of the new policies was to end the heavy involvement of their Ministry in agricultural servicing, placing an onus on growers to do this work themselves, thus reducing massive subsidies and widespread inefficiency.

The new policies are complex. A Price Support Scheme (PSS) was of particular importance and details were provided among papers at the 1977 Conference (APU, 1977c). Under this scheme, the prices of export bananas and the two main processing crops - citrus and pineapples - were to be increased by a new subsidy called "price support". At the same time, large subsidies on crop inputs such as fertilizers, spray chemicals and cultivation work were to be withdrawn in stages. Seasonal credit (Seasonal Servicing Advances - SSA) was to be made available from a revolving fund in order to help growers to meet high new costs. The PSS was described as an "Incentive Scheme" which would stimulate the "good grower to become a better grower" and force the "bad grower to become a good grower", or else make a loss. This raison d'être was expressed in the illustration shown in Figure Four, which appeared in the APU paper.

FIGURE FOUR



Source: APU, 1977c

It was proposed that price support would be implemented on 1 January and 1 April, 1978, with some increases backdated to cover the 1977 season, and the changes were instituted as planned. Input subsidies were to be withdrawn in stages from these same dates, with growers paying full production costs by 1 April, 1979. The input subsidies, however, were not withdrawn as scheduled for political reasons, as a snap election was called by the CIP Government for March 1978. The growers therefore effectively received double subsidies until 1979.

In March 1979 the new Democratic Party Cabinet agreed to withdraw all input subsidies from 1 April, 1979. They also agreed to extra price support to help augment the decreased profit margins resulting from withdrawal of input subsidies. Price support was increased an extra two cents per kilogram on citrus and one cent per kilogram on pineapples and bananas, although Aitutaki banana growers waived their one-cent price rise in favour of retaining the all-important leaf-spot spraying carried out and paid for by the Ministry. This subsidy was worth more than the price support, and it would be very difficult for banana growers to organise their own efficient spraying programme.

Concurrent to the changes in subsidies, the work of the new Ministry of Agriculture was to be completely reorganised to fill the primary roles of research and extension. This re-organisation was planned in detail by two members of the NZ Ministry of Agriculture (Franks and Collie, 1978) and was to proceed during 1978. Actual implementation of these changes was delayed, first by the general election held in March 1978, and then by the subsequent electoral court cases and accompanying uncertainty prior to the removal of Albert Henry's Government by court decision. By this stage, the Ministry of Agriculture had become barely operational.

While there were hesitancy and delays in the new Government over reorganising the Ministry, a policy supporting the growers' associations was vigorously upheld. The most successful association, in Rarotonga's Titikaveka Village, was largely led and supported by growers who themselves, with their families, were strong supporters of the new

Government. The Minister of Agriculture (I. Short) represented the district in the Legislative Assembly. At the 1978 Growers' Conference, which followed shortly after the change in government, members of this association were actively speaking and lobbying in support of the principle of growers' associations and their coordination under a national federation of growers.

The proposal was formally proposed by Tylor (1978) after a strong supporting speech by Minister Short. Short urged the growers towards self-reliance saying "We must stand on our own feet" and "You cannot expect the Government to do everything for you". A message from the absent Premier (Dr. Davis) was also devoted to promoting the concept of growers' associations. He stated that:

> This topic is close to my heart because it is one which I believe is of the greatest importance to the future welfare of all growers in the Cook Islands.

He asked the growers to consider forming legally-constituted, autonomous associations, free from government control and possibly coordinated under a national growers'/producers' federation.

The Premier also suggested that specialist representative groups could be formed by producers of particular crops such as citrus, bananas, copra or market-produce. This diversion from the concept of island/village-based organisations was an important concept that I will discuss later.

A complementary major theme at the Conference was the hope expressed by several delegates of eliminating the PPMB and replacing it with the proposed producers' federation. The aim was summarised by Tui Short, Secretary of the Titikaveka Association, who stated (with respect to Shakespeare) that

> We are here to bury the Marketing Board and Ministry of Agriculture, not to praise them.

In fact, the PPMB was partly a political scapegoat, which, ironically, had fully supported the idea of autonomous growers' associations and even a national society. Needless to say, the status of the Ministry of Agriculture was also at its lowest ebb among growers at this stage,

but at least it had the 're-organisation' changes in subsidies and the high status of expatriate members to fall back on.

It should be noted that there was a feeling of uncertainty among delegates to the 1978 Conference about the policy of the new associations and umbrella federation. The issues were complex. There was a legacy of suspicion among some growers about the idea of 'associations', which had become an integral part of early nationalism and the CIPA. Others were worried that the new policy was virtually a fait accompli by the new government. Pragmatists could see that the 'federation' would depend on the strength of the constituent associations, which could only be described as weak. There were unanswered questions of management and administration, for example. Then the whole new system of organisation was tied into the new policies for agricultural subsidies. These policies were far from easy to understand and thus added complexity to the situation. Nevertheless, the 1978 delegates passed a resolution supporting the concept of a national federation of associations and elected a committee to draw up a constitution and organisational framework.

Meanwhile, to start the 'transfer' of servicing to growers' organisations the Ministry of Agriculture proposed that agricultural servicing centres should be established in each of the three districts on Rarotonga. These centres would provide services of spraying, slashing, and land cultivation. It was proposed that tasks such as pruning and the spreading of fertilizer should be carried out by the individual growers themselves. The full economics of machinery work were calculated. These services were to be charged at a 'complete' price - no longer subsidised by governments.

In August, 1978, the Government directed that field servicing provided by the Ministry of Agriculture would be phased out by April, 1979, when the newly re-organised Ministry would assume a primary role of research and advice. After meetings with growers to facilitate the phasing out of the Ministry's field servicing and the handing over of these functions to growers and their organisations, an Agricultural Services Advisory Committee (ASAC) was established, with both growers and Ministry staff as members.

This Committee agreed that servicing centres should be established in each of the three main districts on Rarotonga to carry out servicing in the field, especially spraying and cultivation. Ministry equipment, supplemented by new equipment provided through aid, was to be transferred to the new servicing organisations. It was proposed by the ASAC that these centres could best be administered by a new centralised management organisation controlled by the proposed growers' federation. Field supervisors would operate each district centre. Growers' associations were to have no direct influence in management, although their representatives were to form the board of the federation. Apart from control of the district service centres, the central management were to have a wide range of functions, administering seasonal loans (SSA), the central agricultural store and the agricultural workshop - all existing functions of the Ministry of Agriculture.

To further complicate the picture, during 1978, business consultants from New Zealand also investigated the potential for a fully-commercial, centralised organisation which would handle all aspects of agricultural servicing and marketing. Discussions and feasibility studies were conducted at top government levels but kept confidential. The proposed corporation, dubbed CIEMAC, would have been managed initially by expatriate consultants and partly owned by a company in New Zealand, which would have also been responsible for marketing. The Cook Islands growers would have acquired a share through the Government by a transfer of current assets to the corporation from the PPMB and Ministry of Agriculture. In addition to local support from the growers, large capital inputs were needed to fund the CIEMAC organisation, and the idea was apparently deferred. The Government, however, remained convinced that agricultural servicing should be much more 'commercial', and this was in line with their overall policy of transferring many state activities to the private sector.

By the time of the August 1979 Growers' Conference there was some urgency in the Government's drive to support the formation of a national federation. One year had elapsed since the proposal was first mooted. In their opening speeches both the Minister, I. Short,

and Dr. Davis urged growers to cooperate and form the federation. "It must be autonomous and it must be yours" said Dr. Davis.

A reasonably clear choice for growers was available at this 1979 Conference. The choice was summarised in a cyclostyled conference paper prepared by members of the 'investigatory' committee (ASAC) formed in 1978. They stated (in emphasis):

> It should be stressed the choice here is a political one. A choice of a centralised, planned, controlled organisation, or a loose-knit, decentralised organisation relying more on grower and private initiative, and less on Government participation.

The Committee proposed that the federation should start as a "smaller independent body" which would provide a central "small, flexible, management and administrative structure". The federation would strengthen and coordinate activities of individual associations, operate agricultural trading activities, communicate marketing information, and coordinate with other organisations such as shipping and trading firms. The Cook Island Development Bank would handle credit, the Ministry of Agriculture would handle market research, and private enterprises would be encouraged to market previously-controlled products. The appointment of an effective manager was seen by the committee as an important step in promoting the new organisation. He was to be assisted initially by a small staff to carry out marketing work, coordination, supervision of field servicing and administration.

In support of this organisational structure, a set of draft rules were also presented to the 1979 conference. Of most interest were the rules governing election of an executive committee. For this purpose a member was to be elected by delegates from each of three provinces - which would encompass Rarotonga, and the Southern and Northern outer islands, respectively - with two extra members elected by all assembled delegates.

The delegates unanimously carried motions supporting the formation of the Cook Islands Primary Producers' Federation and asking for special legislation to be passed to set the rules and constitution of the new organisation. While all the delegates formally agreed to these motions, there were many who were really uncertain as to the

possible future of the proposed organisation. Some of this dissent was politically based, but past failures were also in delegates' minds. Several delegates expressed to me their concern as to whether any other organisation could in fact do better than present government organisations, and also that the weak foundations - the local associations - opened the way for domination by governments or central management.

The weekly opposition (CIP) newspaper (Te Akatauira, 24 August, 1979:4) noting these fears, quickly and adeptly summarised them in the following article.

> The Annual Growers Conference started Wednesday 22 August and is expected to run for a week. One major issue for consideration by the Conference is the proposed establishment of the Growers' Federation to replace the present Primary Produce Marketing Board.
>
> The Minister of Agriculture Iaveta Short has been vigorously pushing for the new Federation since taking office last year. It is now clear that the concept and organisation of the Federation is a virtual copy of the Chamber of Agriculture in French Polynesia. Copies do not always work as well.
>
> The proposed Federation will be a failure in the sense it will not be any more effective or better than the present Marketing Board. The present officers and system will merely be transferred over. More critical is the fact that the key staff of the Marketing Board has since left. In essence then we are only having another change of name - a thing this Demo Government is very good at.
>
> For any such organisation to work effectively and efficiently the basic motivation and impetus for its creation must come from the grassroots, that is the growers and their associations already in existence today.
>
> This is not the case with the proposed Growers Federation and for that important reason it will eventually fail. The Minister has already (sic) condemned by the present Growers Associations in the various districts and islands as ineffective and "dead". Nevertheless, he has been active in foisting his own pet organisation onto growers from the top down onto growers.
>
> The draft Constitution for the new Federation appears as a mish-mash of complicated and unworkable procedures. It also leaves unanswered many questions on how the Executive of the Federation will reconcile the diverse and conflicting interest of different grower groups. Some growers voices and problems will not be adequately considered in comparison with Rarotonga.
>
> Nevertheless, the Morningstar wishes all growers delegates a happy and worthwhile conference.

In the subsequent election of an 'executive' there was uncertainty among the delegates as to whether they were electing a new executive committee for the PPMB or the Federation. Later in the year, however, it became clear that the Federation's executive could not exist properly without appropriate legislation and the PPMB continued to act in its former capacity. Meanwhile no concrete steps were taken to support and build the most important parts of the whole new organisation: the local associations. The many difficulties faced by these important grower organisations, and some of their possible potential, are discussed in the next section.

Postscript: On 28 November 1980, the CI Legislative Assembly finally passed the Primary Producers Federation Bill, having abolished old legislation establishing the Primary Produce Marketing Board. But the Government remained uncertain about handing currently uneconomic operations to the new growers' organisation (Cook Islands News, 2 December, 1980).

4.5 Contemporary Growers' Associations: Activities and Problems

Growers' associations are the proposed foundations of a new national organisation for agriculture. But the associations are not strong. Some limited success has been achieved, particularly on Mangaia. It was there, in fact, that renewed interest in associations was aroused.

The Mangaian Growers Association (MGA) received administrative attention in 1977 because of their apparent ability to shoulder many of the servicing functions of the Ministry of Agriculture and the Primary Produce Marketing Board. During 1978 the Association employed as manager a Mangaian with qualifications in commerce. The Association took over all crop-servicing functions from the Ministry of Agriculture and received new tractors, spray equipment, trucks and other assistance under the New Zealand aid Programme and the UN Development Programme. The independent attitude of the Mangaian growers extended into renewed interest in operating a local processing factory. It had become clear that continuing problems shipping fruit to the cannery on Rarotonga could make the crop completely uneconomic.

Pineapples have been the only major source of agricultural income on Mangaia, and problems of crop economics and large-scale organisation have continued to plague the development. The MGA therefore provides a key example of the potential and problems of outer-island development. The self-reliance of the Mangaian people was a necessary ingredient for success in the development. Although ultimately it has been pineapples, the basic crop, which has provoked most problems, the difficulties of operating a large growers' business operation have been well illustrated on Mangaia.

Preliminary moves to hand PPMB responsibilities for crop payments over to the Association were made in 1977. PPMB officials travelled to Mangaia to explain the new system, and I attended a meeting held in December to discuss and explain the changes. These changes basically involved making automatic deductions of 80 per cent of a grower's 1977/78 season income to be held in account against such costs as current loan repayments, fertilizers, sprays and labour. The meeting was poorly attended; everybody was tired after a full day picking pineapples. Enthusiasm for having control of their own finances through their Association was balanced by the great difficulty that the growers had in understanding the scheme. The concept of investing 80 per cent of total income for a 20 per cent return might be readily understood in Papaa culture but can be very difficult to understand from an island view. For example, there was great concern at the meeting over the availability of cash for short-term needs such as requirements during the approaching Christmas period. The meeting illustrated the problems of imposing new ideas. There was little regard for encouraging growers to develop their own ideas about the economic requirements of commercial agriculture.

The basic idea that price support will encourage 'good' or productive growers posed several problems. For a start, good growers could also be big growers: the more output, the more subsidy received. High new input costs meant that some growers, keeping inputs to a minimum, aimed to increase their acreage to increase output rather than increasing productivity. This occurred with pineapple growers in particular, and to a lesser extent with banana growers. With citrus, a long-term crop, bad growers appeared to reduce

now-costly inputs and accept the higher prices for their lower output. This attitude reflected the most basic problem inherent in the Price Support Scheme and especially in the idea that 'bad' growers would become 'good' growers, for to operate effectively in the new system the growers had to understand the principles of farm management and budgeting. Without this understanding, administration of the Scheme, either by government organisations or the associations, was bound to lead to conflict. But essential education in farm budgeting was lacking.

The most important organisational problems faced by the MGA therefore surrounded the administration of growers' finances by the management of the Association. Under the new Price Support Scheme, the Association began to administer servicing, seasonal loans (SSA) and payments for production. After assessing the seasonal credit needs of each grower, the Association applied to the Ministry of Agriculture for a bulk payment of seasonal credit. This advance was then used to pay for the servicing (fertiliser, spraying, etc.) used by the growers. The Association received all payments from the factory, minus costs such as shipping and handling. They then deducted their own expenses and the relevant debt under SSA and paid the balance in cash to each grower.

The Mangaian Association faced many problems as a consequence of attempting this large-scale administration. There were occasions when growers perceived the Association management to be working against rather than for their interests. Problems directly involved with administering the SSA included loans being made for purposes other than seasonal crop credit, fertilizer bought under the SSA and used for crops other than pineapples, and a lack of suitable records. The Association management was often in conflict with the outlook of the Association Committee, particularly when administrative decisions were required regarding finance and organisation. Many growers did not fully understand or appreciate the complex management of an industrial crop. Consequently, there have been numerous communication breakdowns between the Association, government departments, PPMB, shipping company and processing factory.

The management was often in conflict with government departments on the island, the Island Council, MLA's and the chiefs (aronga mana). Perhaps these conflicts are inevitable when people change very rapidly from subsistence crops and low-input cash crops to a crop which requires industrial, plantation-mode inputs, management and marketing. The Association was an increasingly powerful new organisation which cut across well-established positions of power and status on the island.

Mainly in expectation of government 'hand outs' - due partly to the knowledge of the large inputs of NZ aid, government administrative assistance and machinery to the Mangaian Association - new growers associations were emerging elsewhere. There was also recognition of government support from 1978 for the Producers' Federation which would be an umbrella organisation for all associations. The Federation was central to the 'hand over' of grower-servicing and administration to the local associations. Village and grower leaders were therefore aware that they needed to have active associations to ensure that their area received advantages from the new Federation. Enthusiasm, however, tended to focus around a few keen members of the associations, although wider enthusiasm among growers was generated in several cases.

The six districts of Rarotonga had all formed new associations by 1978. These Rarotongan associations were generally supported by a few important members, who formed executives and sent delegates to the annual growers' conferences and policy meetings concerning the proposed Producers' Federation. The Titikaveka Association, for example, gained in popularity when the executive aquired 18 tonnes of subsidised fertilizer before the subsidies were removed and prices rose. They used a loan from the PPMB for finance. After the 1979 Conference, this association still had considerable support from growers who attended a meeting to discuss the new agricultural policies. Later in the year, support waned until only the executive were attending meetings. Growers in the district said to me that once the fertilizer was sold they could no longer see any positive value in supporting their association. Other activities of the Rarotongan associations included 'field days' with the Ministry of Agriculture and meetings to discuss policy, but attendances were often poor, especially compared to the early enthusiasm following the federation proposals.

In addition to planting, most growers on Rarotonga pursued a job, often a business, and numerous social activities. Community leaders bemoaned the fall in support for church and village activities, although much was still accomplished by group work: building and maintaining halls, school and sports facilities and clinics, for examples. These activities were facilitated through the maintenance of community spirit, competition and status. In contrast, cash cropping has become regarded more as an individual activity of each household. Therefore, the associations were mainly supported only when positive economic value was perceived by growers. Hence, the executives of associations attached considerable importance to the Government's plan to hand tractors, equipment, manpower and cash over to them. They also saw the proposed Primary Producers' Federation as the overall structure which would invigorate their own associations. External inputs are evidently necessary to stimulate these Rarotongan Associations, for spontaneous 'grassroots' support is not likely to endure.

The exception to this situation on Rarotonga was the Arorangi Growers' Co-operative Association. This association had strong leadership under Tamataia Pera, a retired CIP member of the Legislative Assembly. Despite his attempts to portray it as a non-partisan organisation and thus gain support from members of both political parties, this organisation was generally viewed as 'political'. Tamataia recognised the importance and potential of Albert Henry's early community-action projects. He believed that colonially-inspired bureaucracy had taken away much initiative, describing the bureaucrats with their feet on their desks and increasing amounts of power and paper. (This 'white-sox' bureaucracy had of course grown greatly during the time of the CIP governments!)

In many ways the activities, and proposed activities, of this Association reflected the ideals of Henry's 'peoples cooperatives', although Henry was not directly involved in the new movement. There were plans, for example, to sell products such as taro and pia directly to Cook Islanders in New Zealand. In turn, the funds earned were to be spent on imported food products such as frozen chickens. Tamataia told me that he hoped he could thus undercut prices of increasingly

expensive foods at the main trade stores. Two-way trading was an important objective of Henry's early cooperatives and was also intended then as a means to avoid supporting the trading firms.

During 1978-79 the Association was very active. There were over 250 registered members, with some supporters joining from outside Arorangi district. Tractors were obtained from members. Some maintenance of citrus orchards was carried out, but the introduction of the SSA loans minimised the importance of this work. Vegetable cropping therefore became the main cultivation activity. Private credit and accounting assistance were organised with the assistance of a lawyer, to help start vegetable growers. Produce was mainly marketed by airfreight to New Zealand.

But a wider approach to marketing was attempted by the Association. A small market for local produce was established in the grounds of the Association's office in the Arorangi village. In 1979 this market frequently had a weekly turnover in excess of $200. Produce was well presented and prices competitive with the central market in Avarua. The organisers, however, were also active in selling produce directly to households in the village by utilising kin relationships. During 1979 the Association also became involved with the sale of taro from Atiu Island. The taro was air-freighted from Atiu and the best tubers exported to New Zealand, while the rest was sold on Rarotonga. In return, following a reciprocal market system, cabbages, groceries and even icecream were sent to Atiu for sale.

Members of the Association were involved in a variety of activities and planned many others. 'Fellowship' evenings were held to bring people together for discussions and to foster group solidarity. These evenings usually involved a 'pep talk' from the leader. Problems such as roaming stock were discussed, and members were encouraged to plant food and export crops. Leadership and organisation were vigorous and included considerable professional advice, from supporters, on legal and financial matters. At the same time, funds were sought from 'bazaars' and the production and sale of handicrafts. The leader solicited donations and help from outsiders. Submissions were made to the Ministry of Agriculture and the new Federation to allow the Association to take over machinery and crop-servicing activities. Clerical assistance was also sought (Pera, 1979).

La Reta in Avarua harbour, Rarotonga, 1949

Arorangi Growers' Association Office and Market, Rarotonga, 1979.

In addition to the marketing and servicing proposals, planned functions for the Association included provision of credit and savings facilities. The leader wanted to generate capital from within the Association to make loans available to members who wished to begin a new market crop. Some of these planned activities are similar to those of the now-defunct village cooperatives. However, if all the proposed activities for crop-servicing, savings, credit, marketing and possibly retailing were to be pursued, then difficulties of middle management and administration would be apparent.

The organisation, a mixture of Maori and Papaa concepts, reflects many of the conflicts in modern Rarotongan society. Produce is marketed through networks of friends and relatives. The leader - from a titled family - is very knowledgeable and active in land matters, which in turn influences allegiances, as much land in the district is under sub-division and dispute. Labour and material support is supplied for 'social' rather than 'economic' reasons. Yet there is also a strong desire to enter more fully into the Papaa economy, and recognition of the need for new approaches to marketing, business and administration. There are many members with low incomes and a consequent feeling of relative deprivation. Like Henry's original 'peoples' cooperatives', the Association also has the spontaneity and wide following which the other growers' associations on Rarotonga have difficulty obtaining. The movement, with its core of CIP supporters, poses political implications for the Government, who have promised support for associations.

On outer islands other than Mangaia, there is also some association activity. For example, as more bananas were planted on Aitutaki, village associations gained in strength. In 1979, these associations organised the picking and packing of bananas, using private and government support. Moreover, considerable inter-village rivalry stimulated production. The Aitutaki associations have been most effective at encouraging growers and providing valuable assistance to extension workers. For example, tutaka ('inspections' of the plantations) were held by these associations. On one tutaka, growers from a village visited each others' plantations to inspect plantings and maintenance. The agriculture officers used the opportunity to make some points on technical matters. 'Bush beer' lubricated proceedings, which were completed with an umukai and speeches. The 'social' side of the

association is important, particularly for encouraging young men to remain in the village to plant bananas, and generally maintaining the growers' interest in bananas. On the other hand, support obtained from established village obligations can conflict with economic activities. On one harvesting occasion, for example, dissent arose among a harvesting group because they always picked the bananas of a man otherwise employed full time. It was felt that his 'donation' of a few boxes of bananas to the association fund was insufficient recompense for the advantage he was gaining.

Following the encouragement of the Premier at the 1979 Growers' Conference, special-interest associations have been an important recent development. One association active in 1979 was the Vegetable Growers' Federation, formed in response to an urgent need to organise improved quality control and handling procedures for air-freighted produce. The executive soon prompted the Government to implement new produce inspections, but a primary objective of the executive - the provision of cool-store facilities - has not been fulfilled. Without capital or economic organisation, a 'pressure' group can only stimulate proposals. Individual growers and companies are providing their own cool stores, while efforts to organise a common facility, with government or private support, remain frustrated. Another special-interest group was the Beekeepers' Club. Again, problems arose over economic functions - the importing of queens and equipment - and two members started a company for apiary business, which included supply of equipment. Copra-growers were another group seeking recognition and autonomy, particularly with regard to administering the proceeds of the fund held by the PPMB for price stabilisation. A Copra Board was formed at the 1979 Conference.

The formation of these special-interest associations is important because they can be better equipped than the local associations to lobby on behalf of growers. Those associations formed for a special purpose will usually have the support of growers, even if only until that purpose has been achieved. The village associations will continue to face numerous problems in defining their roles, obtaining support from growers, fulfilling administrative functions and avoiding conflicts between 'social' and 'business' activities.

4.6 Conclusions and Prospects

To conclude this chapter I will refer to 'business groups', the main topic of the next chapter (five). There is a fundamental difference between a 'business' group and an 'association'. The former reflects an aim to move away from the family and village for economic organisation. The latter emphasises personal relationships and group support. Where there is a mixture of social and economic functions, however, there is bound to be conflict.

Many of the functions of the proposed Primary Producers' Association are well suited to a business group. Various other possibilities for a business-like solution to marketing and crop-servicing have been examined by the Government, growers and commercial organisations, and their proposals will need to be pursued further. The proportion of ownership and responsibility that is to be in the hands of growers and their organisations will need special attention. To build a business on the present associations is to build on sand. A fully competitive 'economic' organisation is necessary with careful delineation of possible association activities.

In addition to 'speaking' for growers, the associations can pursue 'economic' functions, but they have to be supported. This support must include assistance and training for middle management, and also educational/advisory activity aimed at all the members. The Ministry of Agriculture and existing education institutions may be able to fill this role. Given a specific economic purpose, the national Federation could not speak in general for the growers. A separate representative organisation may be necessary or, as at present, special interest groups can lobby on behalf of growers.

As indicated in the next chapter, there has been recently a rapid increase in entrepreneurial activity, and more business-minded growers have become active. This growth will lead to disparities in income and large numbers of relatively deprived people if more widely based economic development is not achieved. In the absence of successful agricultural/rural programmes, it is likely that further efforts to form 'peoples' cooperatives' will emerge. Ways must be found to support these new social organisations through provision of a suitable rural infrastructure,

in which the associations can participate. In addition, the important 'social' activities of the associations must be recognised. There is little doubt that effective new rural organisations must form a vital part of any future, self-reliant economy.

CHAPTER FIVE

AGRICULTURAL ENTREPRENEURS

Efforts to form new types of collective economic organisation have been described in the previous chapter. They include organisation from 'above' (through governments) and from 'below' (through social movements). I will now examine some other recent developments in economic organisation, starting in section 5.1 with a brief discussion of the need to proceed beyond a dualistic model of the role of entrepreneurs, and introducing the concept of economic brokerage. A further useful concept is the 'entrepreneurial group' (5.2). The development of entrepreneurship in the Cook Islands is described in section 5.3 and a case study of entrepreneurs who operate commercial piggeries on Rarotonga is outlined in section 5.4. This development of intensive piggeries requires new commercial attitudes (5.5), and the attempts by pig-keepers to solve problems, such as marketing, through collective organisations demonstrate many characteristics of an emerging entrepreneurial group (5.6). Some conclusions about entrepreneurial activity are presented in section 5.7.

5.1 The Role of Entrepreneurs in a Developing Economy

Individualisation of economic activities, in combination with the growth of the monetised economy, has resulted in an organisational trend known as 'entrepreneurship'. In the previously well-established structural-functional theory of economic development, the entrepreneur has been seen as vital in the process of economic growth. In this theory it is the entrepreneur who introduces innovative ideas, breaks down customary resistance to the monetised economy, and generally stimulates economic growth so that eventually the welfare of the whole population is improved. Entrepreneurship is regarded by many economists (see Leff, 1978) as being very important both for mobilising

development resources of land, labour and capital, and for opening and pursuing new market opportunities. In a perfect economy, with all necessary inputs marketed, all prices known and clear production functions, entrepreneurship should not be lacking. In most developing economies, entrepreneurship is lacking and has a "distinct and critical role" to play (Leibenstein, 1968). On the other hand, entrepreneurs can also be regarded as part of a new economic and political élite, which benefits at the 'expense' of a labour force, customers and tenants. Both these views of the entrepreneur can be valid and useful.

Writers on development have commonly recognised entrepreneurs as part of new economic organisation which exists alongside little-changed 'traditional' economic systems in underdeveloped countries; in this sense they form a 'modern' commercial sector in a dualistic economy. Bollard (1976:79), for example, described increased specialisation in the 'modern', monetised sector of Tonga. Such specialisation was seen to include growers who concentrate on only one crop, and middlemen who replace direct consumption and exchange.

In contrast to this view, dependency theorists argue that 'dualism' provides an unrealistic explanation of the 'modern' and 'traditional' sectors, especially when the two sectors are not considered to be closely related through social and economic exchanges. In fact, these two sectors are usually involved in a complex system of dependent relationships, with economic, social and political power concentrated in the modern, urban or metropolitan sector. (See also section 2.1.) Frank (1966) for example, regarded the development of a 'modern' sector as an extension of the basic conflict between metropolitan and satellite (peripheral) societies. A section of the local bourgeoisie can be seen to have an increasing vested interest in maintaining the system whereby their society is dependent on a metropolitan power. The peripheral sectors of their own society are dependent on the commercial, urban centres. I consider that a dualistic model of the Cook Island economy, with a modern commercial sector and a traditional subsistence sector, is inadequate for understanding entrepreneurship there.

A useful concept for understanding the relationships between different economic sectors is 'economic brokerage'. Economic brokers are "those individual and social categories who play a major part in connecting local production systems with the wider socio-economic framework and who control the crucial sets of relationships involved" (Long, 1975). Economic brokers maintain social relationships within the institutions of two different 'modes of production', and in doing so they usually demonstrate both physical and social mobility.

'Economic brokerage' can be used to explain changes in the Cook Islands where there are increasing numbers of entrepreneurs. Many entrepreneurs maintain relationships in both Maori and Papaa contexts. Most 'commercial' growers will grow food for their household and give a pig to the church umukai. They form one of several sub-categories in the mixed-subsistence cash-cropping mode proposed by Yen (1979b:67). Growers frequently run a plantation, shop or business and participate in community or political activities.

The multiple social and economic relationships that are evident often involve physical mobility. This mobility is clearly illustrated because it involves movement between Rarotonga, the seat of social, political and economic power, and the outer islands. Since the air services to the outer islands began, the mobility of the entrepreneurs has become marked. Most of them are involved in multiple enterprises. There is also an interesting new category of 'metropolitan' entrepreneurs, who are characterised by mobility between Rarotonga and international economic centres and markets, including Auckland, Tahiti and the United States.

Through their mobility, the entrepreneurs carry out new economic functions while maintaining their relationships with an established cultural base. By continuing their social and economic relationships with their kin groups and villages the entrepreneurs demonstrate economic brokerage. The entrepreneur is therefore very much involved in social change and is a key person in agricultural and development planning. New forms of economic organisation, in which entrepreneurs are collectively involved, are of special interest and there is a need for more suitable models to analyse this 'group' activity.

5.2 Entrepreneurial Groups

Formation of economic organisations among 'groups' of agricultural entrepreneurs demands more precise definitions of entrepreneurial activity. Leff (1978) has examined the grouping of agricultural businessmen in under-developed countries and provides a useful model which I will follow in this chapter.

Recognised forms of capitalist organisation include public corporations, broadly-held public companies, multi-national corporations, family-owned and private companies, partnerships and owner-operator businesses. Leff described the 'group' as being essentially different from these organisations and really a specialised form of entrepreneurship. The group can be defined by the following characteristics (ibid.):

a) Groups draw capital and management from wider sources than a single family, and usually from a number of wealthy families.
b) The owner-managers typically include some members of the family from which the group originated.
c) Participants are linked by relations of interpersonal trust, on the basis of a similar personal, ethnic or communal background.
d) Groups tend to be oriented towards multiple products (and eventually multiple companies which parallel their metropolitan cousins).
e) Groups usually exercise a high degree of marketing power in their area of operation.
f) Groups tend to use "intermediaries" (such as accountants, lawyers and business consultants) to tap outside resources of management and skills and to acquire access to poorly-distributed technical information.
g) Groups facilitate interaction between institutions rather than between individuals.

The total assets of business groups can be very large in some under-developed countries, but the most important aspect for a tiny economy such as the Cook Islands is the percentage control held by the group of that part of the economy that is not controlled by public-sector organisations or multi-national interests.

Groups are basically institutional modifications which benefit from imperfect market conditions. In explaining these conditions, Leff used the term 'market' in a wide sense which includes some well-known conditions of market failure in under-developed countries. These conditions can include a scarcity of trustworthy and competent managers; an inadequate supply of certain types of technical information which, when they are obtained, will often be retained for the exclusive use of the group; and, non-market restrictions on credit facilities, tax incentives, licensing, etc. The importance of political influence and connections can be an indication of imperfect marketing of inputs to the rapidly-growing business sector, with groups out-manoeuvering individuals in gaining access to scarce resources. But political influence may not be a sufficient reason on its own for the formation of groups. The presence of groups usually demonstrates a highly-skewed distribution of wealth and an imperfect access to capital.

A need to improve marketing is an important reason for the formation of groups. The internal economies and markets are usually less organised (routinised) in peripheral than in metropolitan countries. Consequently, when there is a rapid increase in entrepreneurs(and therefore suppliers), there is more competition. At the same time, the activity of large overseas companies and the supply of imported products is also increasing. The groups respond to this competition. They aim for vertical integration and diversification, which provides flexibility beyond one-product businesses and makes allowances for risks that occur. These risks can be compounded by conditions of political and social instability.

One group on Rarotonga provided an example of the move towards diversification of product markets and greater vertical integration. The group, comprising growers who themselves had a variety of business interests and income, marketed vegetables locally and for export, imported vegetables from outer islands and New Zealand, sold seeds and still sought to diversify further. They pursued several market outlets and methods both on Rarotonga and in New Zealand, acquired access to commercial capital and hired legal and business advice.

A number of analytical benefits are made possible by applying this model of groups (which arose from analysis of capitalist organisation in metropolitan economies and some larger-under-developed economies) to the understanding of new types of economic activity in small, peripheral economies such as the Cook Islands. These benefits include the following:

a) It can be seen that the group organisation allows otherwise scarce entrepreneurial ability to become less of a constraint to the formation of new business enterprises. Economies of scale are sought in the use of managerial skill, innovativeness, etc., and the overall managerial base is enlarged.

b) Group organisation allows fully capitalistic methods of production and decision-making. Possibilities are made available for moving scarce capital and other resources between the different activities of one group.

c) The group allows its members the possibility of avoiding customary and family obligations. Profit can be reinvested, labour can be employed by the group rather than the individual, etc. An individual who is not acting in a group framework and receives unusually high profits may attract more kin who will initially help him to expand his activities, but this can also involve many longer-term obligations to those kin folk.

Finally, the use of concepts such as entrepreneurial group and brokerage allows an important distinction to be made between groups and cooperatives. Business groups usually mobilise resources of capital and management that lie outside the realm of the participating families. There is therefore a heavy emphasis by these group organisations on external relationships. In comparison, cooperatives usually utilise the resources and skills that are available among the members and therefore emphasise internal social relationships. Both these types of organisation are of concern to agricultural policy and planning in the Cook Islands. In sections 5.5 and 5.6 there is a detailed description of new commercial activity,among pig-keepers on Rarotonga, that can be analysed as an emerging entrepreneurial group.

5.3 Entrepreneurial Activity

Until recently, the private sector in the Cook Islands has been predominantely in the hands of metropolitan-based trading firms such as A.B.Donald, a few individual Europeans and a few Cook Island families. An early economic élite among Maoris was closely associated with those individuals of chiefly status who obtained new types of social and economic power in the system introduced by the missionaries. Crocombe described the emerging new social classes on Rarotonga in the late nineteenth century. The power of the ariki was expanded then by their control over lands suitable for lease by Europeans and for occupation by outer islanders, with income consequently available from rents and tributes. In addition, the ariki controlled the local market houses supplying provisions for ships and other goods for trade. Also, through the raui, they controlled production of export crops for their own advantage (Crocombe, 1964:90-94).

As trade slowly increased and a centralised administration and commercial centre grew on Rarotonga, the new economic and political élite expanded and broadened beyond chiefly ranks. This élite began to acquire the characteristics of an emerging new status group, with different avenues to prestige in comparison to 'traditional' status groups. For example, Stone (1967:370-376), traced the emergence, by the 1950's and 1960's of a new "incipient élite" on Rarotonga. He saw that this group was comprised mainly of those people employed in the Administration on high regular incomes, those people with rights to cultivable land and prepared to adopt new agricultural technology, and those individuals who were expanding into commercial businesses from an otherwise limited cash income.

Stone provides a detailed description of this new élite:

> The islanders who achieved these positions usually shared at least some of the following characteristics: the possession of a traditional rank, which in turn normally provided them with access to areas of good land; a sound education, either by local standards, or often acquired in New Zealand; and part-European ancestry, the father or grandfather in several instances having been a trader or sea captain. It will readily be seen that these factors were frequently inter-related.
>
> (Stone, 1967:371)

The élite was strengthened by inter-marriage. Stone named a number of people who were active in this élite and exhibited entrepreneurial ability. Several of these individuals remained important in the commercial sector through the 1970's. In addition, many became active politically, first on the Legislative Council formed in 1958, and then later in Albert Henry's first government. More recently, the majority of the "incipient élite" appear eventually to have supported the Democratic Party, which has made encouragement of private enterprise a primary political objective since becoming the Government in 1978.

During the 1970's there was a rapid increase in entrepreneurial activity by Cook Islanders. This growth in local businesses was centred on Rarotonga. Stores are a particularly important local enterprise, and their operation is a good indication of entrepreneurial skill and motivation. Most of the stores are located on Rarotonga, with Aitutaki the next most commercialised island. Entrepreneurs have been active in operating stores on other outer islands as well, frequently in competition to the established trading stores. Often the aim of a business-minded grower or government servant is to obtain the capital to build and stock a small store. The store will be run by his wife or children, provide a small income, and enable the family involved to buy imported food and other goods at wholesale prices. Stores can also provide an outlet for some of the owner's locally-grown produce. Ownership of a store is a source of status: a clear sign of enterprise and 'advancement' in the new commercial ways.

While most of the small stores are family-operated (simply registering as trading concerns), there has also been a rapid increase in legally-constituted private companies. Since company registration was introduced in 1971, a total of 317 companies had been registered by December 1979. Thirty-eight had become defunct, leaving 279 active, of which 43 per cent had been registered in the last three years, reflecting a current upsurge in entrepreneurial activity.

In 1979, the majority of companies (95%) were registered as being primarily active on Rarotonga, with only three per cent on Aitutaki and two per cent on other outer islands.

Most of the registered companies are owned by Cook Islanders. My examination of the company registrations showed, however, that many are owned by a small group of local Papaa and people of mixed marriage and blood, and include numerous partnerships with people domiciled overseas.

A few large overseas companies were registered with interests in a range of activities such as banking, transport, insurance, hotels and communications. Air New Zealand Ltd., for example, has a monopoly on the important air routes, carries the majority of tourists and air-freight, and also owns a third share of the largest hotel, The Rarotongan. A subsidiary company - Cook Island Airways - operates inter-island air services. The National Bank of New Zealand is the only commercial bank, and in 1979 was active in loaning capital to enterprising growers. Cable and Wireless Ltd. is an international communications company which started to conduct most external telecommunication services in 1979. Three overseas companies were registered as clothing manufacturers. Others were registered as active in tourism and tourist services, insurance, building and construction, property development and fuel/gas supply. In total there were 34 companies with primarily overseas ownership.

Until 1978, the fruit-processing factory was owned by Greggs Ltd. of Dunedin. The factory is now owned by the CI Government through the Kia Orana Foods Corporation. Oasis Industries, a subsidiary of the large NZ Company, L.D. Nathan & Co. Ltd., has a management and marketing contract, and a small shareholding.

Most of the companies registered are in the service and tourist sectors. So the fourteen companies with their main activities in agriculture, forests and fisheries are of particular interest. Ten of these companies were registered in the last two years and several could be classified as 'entrepreneurial groups'. A breakdown of registered companies by main stated activity is given in Table 5.3.1.

There has been an increase in agricultural entrepreneurship which is of particular interest in this chapter. The crops grown by these entrepreneurial growers are characterised by a large degree of grower autonomy and initiative in obtaining capital and credit, operating

TABLE 5.3.1

Registration Dates of Companies Active in 1979 by Type of Company

	1971-73	1974-75	1977-79	Total
Agriculture and fisheries	3	1	10	14
Wholesale and Retail	24	15	21	60
Construction and allied Businesses	5	12	23	40
Food Manufacturing	3	-	7	10
Other Manufacturing	3	1	8	12
Transport	5	2	3	10
Rental Car and Taxis	5	2	3	10
Auto Services	4	4	5	13
Tourist (accom. tours, restaurants)	4	10	12	26
Property Development	10	8	7	25
Other (Insurance, salvage, etc.)	5	6	14	25
Overseas (all categories)	20*	9	5	34
TOTALS ACTIVE	91	70	118	279
De-registered	4	11	23	38
TOTAL REGISTERED 1971-79				317

*Mostly company registrations transferred from New Zealand in 1972.

Source: Company Register, Rarotonga, December 1979

machinery and organising marketing. In contrast are the highly-administered 'traditional' export crops marketed by the PPMB - pine-apples, citrus and bananas - although entrepreneurs do cultivate these crops as well. The 'traditional' export crops have been encouraged in the past by a variety of aid and development projects (see chapters six and seven). Crops which usually attract entrepreneurs are short to medium term, allowing high returns off smaller areas of land, partly in response to either short or poor security over the land. These crops usually involve higher risks, more capital inputs and more intensive labour than the traditional export crops.

I will categorise these crops by their markets:

a) Local Market
(Vegetables and Fruit)
- Direct sales from home, truck and market stalls in Avarua
- Sales by commission from shops and markets.
- Sales to institutions, e.g., hotels, restaurants, hospital.

(Pigmeat)
- Direct sales from property particularly for feasts
- Sales through shops
- Sales to hotels and restaurants.

b) Airfreight Market
- Sales of 'competitive' produce in the NZ 'off season' e.g. beans, capsicum, zuchinni.
- Sales of specialities with a relatively steady demand, e.g. paw paws, drinking nuts.

Fruit and vegetables are sold on commission from shops around Rarotonga and the Avarua market. In one week (November 1979) my market survey showed a total gross return to growers of $6,100. Fifty-four stores and the Arorangi market handled produce worth $3,000 (with five outlets taking 56 per cent of this amount). Produce worth $1,100 was handled by vendors at the central market in Avarua and around $2,000 by institutions, mainly the Rarotonga Hotel and the hospital. At least one third of the total gross return was received by two growers - particularly through supplying most of the institutions/ restaurant sector. The many smaller growers have erratic production, including airfreight rejects which they sell at shops and the Avarua

market. Most growers relate their expected prices to costs of production, previous prices or even gross returns on the NZ auction floor, rather than the realities of supply and demand. A grower's choice of outlet, and the patronage of customers, remain strongly influenced by kinship and social obligations. Consequently, the local market can be very unstable.

The NZ auction market for airfreighted produce is also risky, with frequent fluctuations in prices. This trade has grown steadily since jet services began in 1974 (Table 5.3.2). Production has come mainly from 'moonlighters' - growers looking for quick, high returns to supplement their other incomes. What is most interesting is the rise in production of specialties, particularly paw paws, which have a more stable demand in New Zealand. Paw paws require more specialised handling and packing than capsicum or beans, and most of the paw paws are produced by up to five growers. From my discussions with these growers, I concluded that they have a special requirement for relatively stable markets that are likely to reward high inputs of capital and labour, and utilise expensive machinery and costly land leases. In production for the local market, entrepreneurial

TABLE 5.3.2

Value of Produce Air-freighted from the Cook Islands

Year	Specialty Fruits	Vegetables	Total
1974	33,822	6,310	40,132
1975	37,808	35,628	73,436
1976	87,127	115,345	202,472
1977	104,752	129,811	234,563
1978	131,929	169,289	301,218
1979	139,500	428,200	567,700

Source: Cook Island Ministry of Agriculture Statistics (APU, 1979b, 1980b)

growers also look for steady demands from shops and institutions for their main crops - and livestock - and supplement this production with more risky ventures. These growers take an active interest (including travel overseas) in pursuing new market possibilities. They prefer to make direct contact with new outlets and their agents rather than operating through established institutions such as the Primary Produce Marketing Board.

An analysis of the attitudes of agricultural entrepreneurs to marketing is important, for it leads to an improved understanding of recent activities. The direct consignment of produce to an auction market, or to individual outlets on a casual basis, contrasts with the development of specialised private organisations for marketing. Groups of growers form these collective organisations, often in combination with a range of other commercial activities in the agricultural sector. The expansion of a new market for lean pigmeat on Rarotonga and the attempts by entrepreneurs to fill this market, both individually and collectively, were a major part of the following case study.

5.4 Case Study: Commercial Piggeries on Rarotonga

During my field research it became apparent that the above model of entrepreneurial groups provides a useful perspective for analysing the activities of commercial pig keepers on Rarotonga. Several new commercial piggeries started operating on Rarotonga in 1977. During my initial field work, in late 1977, it was clear that the development of the commercial piggeries would make a good case study of the introduction and adoption of a new far-reaching farming technology by a number of innovative and business-minded growers. The new commercial piggeries have several important characteristics. They have high fixed assets in permanent buildings, a large proportion of recently imported breeding stock and high expenditure on imported proprietary (commercially prepared) meals. These piggeries are a significant new technical innovation compared to 'backyard' production. Previous attempts at operating small, concrete-floored piggeries were limited, and only sporadic imports of new breeds had been made.

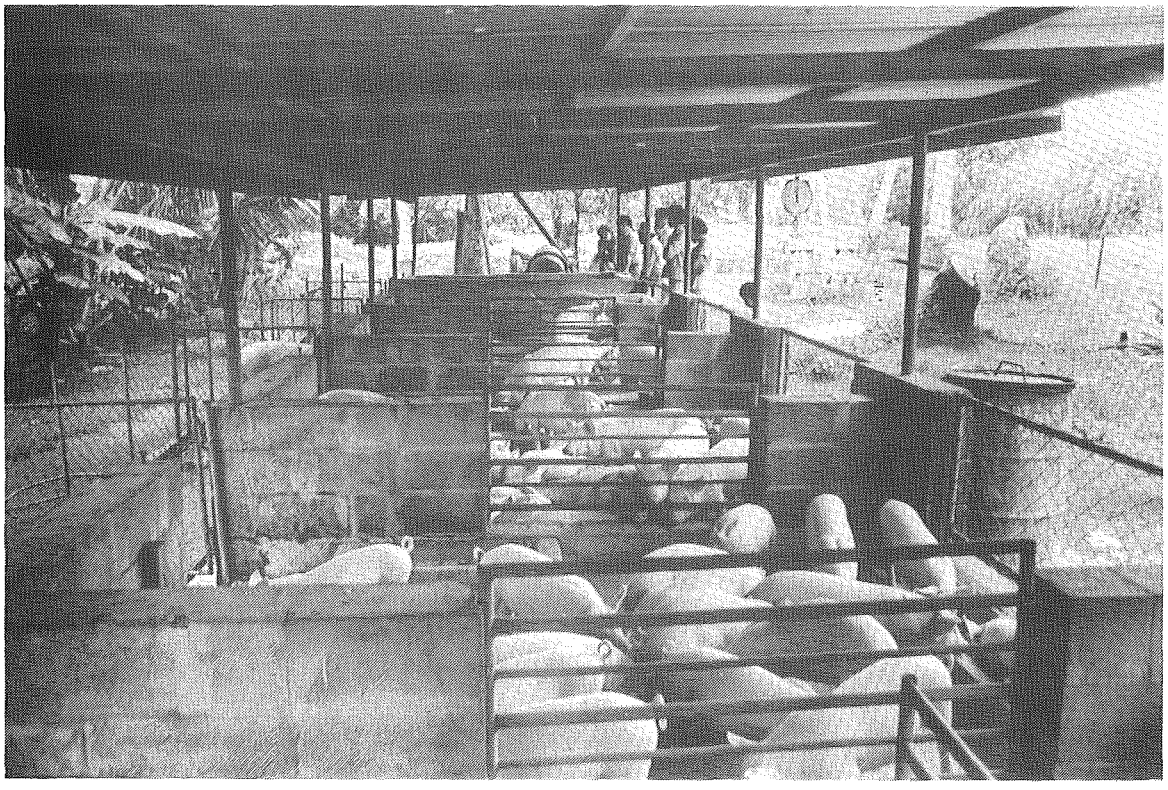
Most Cook Island households keep pigs, but it is apparent that the backyard system of production is unable to expand significantly within present constraints. There is a limited supply of local feeds, limited technical knowledge, and a lack of capital for development of stock, fencing and housing. Perhaps most importantly, the existing system is geared for households to produce, with minimum effort, mainly small fatty pigs for use in feasts (umukai). Yet the demand for a supply of large lean pigs has reached a level where either many backyard producers must make very significant changes to their present farming system, or, at least some pig keepers must achieve success with the new system of production.

My preliminary studies of the commercial pig keepers showed that they faced a number of important problems in establishing their piggeries as successful enterprises. A low level of knowledge about technical and economic matters, a basic lack of any suitable cheap local feeds and the absence of any organised system of killing and marketing were all major problems. The economics of the piggeries appeared dubious. But the pig keepers were generally resourceful, with a relatively high level of entrepreneurial ability. Most were involved in a variety of business enterprises, including other cash crops, and they also had additional sources of income.

From the early stages, the pig keepers requested aid and assistance from the Cook Island and New Zealand Governments. In March 1977 a piggery consultant visited the Southern Group under the New Zealand aid programme. Cornes (1977) concentrated his attention on suggestions for assisting those commercial pig keepers who were displaying "initiative". He was very sympathetic to the idea of providing them with technical assistance along the lines of intensive pig management in New Zealand. It was natural that the New Zealand aid team gave attention to this project, which was geared to change, rather than to alternative projects which would have been more complicated to initiate. I questioned which, if any, of the following recommendations of Cornes were a suitable avenue for New Zealand aid (Taylor 1978:28-9):

a) Payment of New Zealand expertise.
b) Funding a training trip to New Zealand for a piggery operator.
c) Continuing export incentives that directly subsidise feed imported into the Cook Islands from New Zealand.
d) Loans to build piggeries based on overseas imports of roofing iron, galvanized-iron pipe, cement, reinforcing, etc., at the high cost of $1000/sow.
e) Provision of New Zealand-bred sows at a landed cost of up to $700/sow, much of the cost being directly subsidised.
f) Provision of New Zealand berkshire boars for a boar scheme available to piggery operators and villagers.

Improving 'Backyard' Pigs, Mitiaro, 1979



Commercial Piggery, Rarotonga, 1979.

My case study appeared to involve initially an analysis of the detailed technical and social problems of using aid (as suggested by Cornes) to assist the development of intensive commercial piggeries, compared to the provision of assistance for a more general improvement of 'backyard' or village pig production (Taylor, 1978). A visiting veterinary surgeon (Salisbury, 1977:6) had already cautioned against commercial piggeries unless a cheap source of feed, cheap housing, necessary management skills and a satisfactory technical/animal health service were available. Salisbury recommended that development should be pursued at the village or household level.

'Aid' to the commercial piggeries has not received any priority, and development continues to rely on the initiative and capital of the owners. They did receive some important 'assistance' in June 1978 when a second livestock course was organised by the South Pacific Commission (SPC). The course was fully supported, and subsequently there was a significant improvement in management of the piggeries, and in their potential profitability. The Ministry of Agriculture provides advisory, veterinary and breeding services which are all of assistance. While these technical and advisory services are useful to the pig keepers, they do not constitute an aid programme providing costly inputs to buildings, imported stock and imported feeds. Development which has occurred has been based largely on the entrepreneurial ability of the pig keepers themselves: their ability to mobilise resources and find their own solutions to problems.

This entrepreneurial activity seemed to require a case study in itself and therefore I began to focus on commercial pig producers from the beginning of the main field-research period in June 1978. I attended the SPC Livestock Course held at that time and thus began a detailed analysis of the technical and managerial problems faced by the pig keepers and their organisational responses to these problems. I also continued to study the potential and development of semi-intensive systems, but now made this part of my study of domestic food production, a topic discussed in chapter eight. There were obvious links between the two studies as other people became aware of developments in the commercial piggeries.

Data were obtained primarily from detailed interviews with pig keepers and observation of their activities. A period of six months spent in the Titikaveka district was of considerable assistance, as I was identified as a resident of the district and had frequent contact with several growers. I made regular visits to other pig keepers and horticultural growers on Rarotonga, discussing the problems they faced and observing their management patterns in close detail. 1978 budgets for five commercial piggeries, for which there were suitable records, were collected by myself and Taukea Raui (APU) in January 1979. It should be noted that I was, to a limited extent, regarded by the pig keepers as one of several 'outside' sources of information on management and technical matters, as discussed in section 5.7; they were generally pleased to exchange information with me.

5.5 Development of Intensive Pig Keeping

In tracing the origins and activities of the piggery group it is first necessary to emphasise that intensive pig keeping was not previously a common or well-known agricultural system in the Cook Islands. There was a small livestock section in the Department of Agriculture in the early 1970's, and three members of the Department had had overseas training in livestock production. Previously, there had been some intermittent importing of new breeds and some attempts in the 1950's to start small piggeries in schools.

Significant moves appear to have been made in 1975. The 1976 Annual Report of the Livestock Section noted that the Taipara piggery had been established by the Department of Agriculture. Two berkshire boars for the piggery arrived from New Zealand and began to service local sows. Raui (1976) reported on a visit studying pig development in W. Samoa. In 1976, two important events were promoted by the South Pacific Commission. SPC officers held a livestock course for growers interested in improved methods of pig keeping. A film about pigs and methane digesters was shown. An SPC officer also organised a demonstration trial where local pigs were fed on a concentrated, imported ration. Although the pigs did not grow as well as imported breeds might have, their performance was obviously much improved compared to the growth of pigs on local feeds. Bewg (1976:34) commented:

> People who saw this demonstration were very impressed by the rapid growth which the food produced and could see a great difference between this performance and that of traditionally reared pigs. As the Department of Agriculture commented afterwards: "visually, the response of the litter to the feed was remarkable, and it has aroused a lot of interest among local breeders".

One man, Panapa Haura, built a new five-pen concrete and timber piggery, which he stocked with imported large-white pigs fed mainly on imported meal.

By early 1977 there had been a wide and active response from interested growers around Rarotonga, and the piggery 'group' made a faltering start when the Takitumu Piggery Company was formed and registered. The Company comprised 30 shareholders, each holding 500 shares to make up a total nominal capital of $15,000. A loan of $15,000 was procured to build the first ten piggeries, for the shareholders in the Titikaveka district. Initial bulk purchases of breeding stock, feeds and building materials were to be made with the loan, which was to be repaid from the capital contributions of all the shareholders. After these first ten piggeries were established, profits were to be used to build ten piggeries in each of the next two villages, Ngatangiia and Matavera.

Imported building materials, particularly pipe, were purchased, but there is some dispute as to whether any savings were achieved by the Company. Imports of livestock have only been made by a few individuals, who then sold breeding stock to other growers. No bulk feed purchases were made by the Company, and all imported feeds were originally obtained from the Agriculture Department and one trading store. The manager of this store was a shareholder and he assisted the Company with management advice. His store planned to buy pigmeat from the pig keepers and provide cheap feeds purchased at bulk rates from New Zealand, with an additional advantage gained through NZ export incentives. However, the manager's influence and credibility fell when he left the store and his plans failed.

Not all shareholders paid up their capital. When the Company consequently failed, eight new piggeries, some only partly completed, had been built. The Government took over the loans and individual piggery owners were left with debts of up to $2000 to pay on their own accounts. The legal situation with loans and shareholding was not clear, but the Company was finally de-registered in 1979. It was a somewhat faltering attempt to begin a collective enterprise.

Before considering in detail the technical and managerial problems faced by the pig keepers during 1978/79,and some of their responses, it is important to note the entrepreneurial ability of the individuals involved. I studied fourteen commercial piggeries. The fourteen owners all had other sources of income, and several had other business interests. Eight were employed full time in the public service, including a school headmaster, a treasury official and two policemen. Three of the others were full-time commercial growers/ businessmen, another a private employee, another a retired public servant, and one a medical practitioner who was also a member of the Legislative Assembly. Several of these men were active in community affairs. There was a wide range of business ability and attitudes among these pig keepers and also a wide range in technical knowledge. Most were open to new ideas in trying to establish their piggeries on a profitable basis but, as I will discuss, the development of business attitudes was important. Several more 'successful' piggeries could eventually be distinguished by the attitudes of their owners.

To understand why only some of these pig-keepers were likely to accomplish success entrepreneurially, it is necessary to examine their attitudes to the main managerial problems that they faced, especially with regard to sow productivity and piggery output, and the costs and use of feeds.

Sow productivity was low. Small litters and inadequate numbers of litters per year are directly related to a lack of technical knowledge about sow management,care of baby pigs, weaning and mating techniques. After the successful and informative SPC Livestock Course in June, 1978, which most pig-keepers attended, the average

litter had improved from low levels to around eight live piglets, although some pig-keepers were having more problems than others. They were then aiming at an average of two litters/sow/year and were close to achieving this. Therefore the piggeries were approaching an acceptable annual average output of 14-15 piglets per sow. However, there continued to be room to improve baby-pig management. One pig keeper expressed the problem to me in late 1979, when he explained that he had never really realised before that a loss of a baby pig was a loss of profit. It is difficult to grasp the concept that, because sow maintenance is a large 'fixed' cost, efficient weaner production is crucial to a profitable commercial piggery.

Directly related to this problem of sow productivity is the ratio of pigmeat produced per sow annually. This vital indicator of potential profitability has been very low, but Table 5.5.1 shows that in 1978, in addition to an increase in pens operated, there was a general increase over the piggeries in the ratio of growing pigs to breeding stock (1.9 in June to 4.5 in December). This improved ratio was partly due to culling of surplus sows and some Island sows which were used to temporarily 'fill' the piggeries.

TABLE 5.5.1

Stock Carried in Commercial Piggeries (Rarotonga) during 1978

Date	No. pens surveyed	Total Breeding	Total Growing	Ratio of Growing to Breeding
June 13	71	95	177	1.86
Sept. 8	81	143	325	2.27
Dec. 10	90	93	414	4.45

Source: Field Surveys

Improvements achieved in the quality of sows through cross breeding and holding of younger stock, are not evident from the figures. Table 5.5.2 shows that in 1978 the ratio of sales and growth/$100 average breeding stock over 1978, ranged from $269 to $730 in five

piggeries. There was considerable room for more improvements overall in the amount of pigmeat produced in relation to number of breeding stock being carried, and there were considerable differences between piggeries.

An important aspect of low meat output in the piggeries is market pressure towards sale of small pigs of up to 50 lbs. liveweight for umukai. At present, sales of these pigs are uneconomic for the producers, as they lower the output of a piggery and no premium price is paid to compensate. Around 25 per cent of the surveyed formal market (as described in the next section) was for smaller pigs. However, there is also social pressure to sell smaller pigs direct to the public. The pig keeper with the highest income per sow ratio sold many small pigs; therefore, this is a problem throughout the piggeries. In 1979, some pig keepers were starting to resist the demand to sell small pigs when they did not receive a premium price to compensate for lost growth potential. This response is again related to the perception of weaner production as a fixed cost - the umukai pigs being little more than large weaners. The new group formation, with proposed killing facilities and market organisation, will allow grading of pigmeat and provide a more impersonal outlet, thus circumventing part of this problem. The model of entrepreneurial groups shows that avoidance of customary obligations can be a function of the group structure.

Low piggery output is related to another major problem: the high cost of imported proprietary pig feeds. The cost of feed, and the price obtained for pigmeat, are the two main variables in any commercial piggery. Feasibility studies conducted by myself and by the Ministry of Agriculture (APU, 1977, 1978 and Raui, 1979) showed that it was impossible to operate profitably a new concrete 5-10 sow piggery, using all imported feeds without obtaining significant increases in prices paid for pigmeat.

Only a few of the pig keepers kept detailed records. Possession of thorough records alone indicates a business-like approach. Information on five piggery budgets prepared in 1978 is presented in Table 5.5.2 The budgets show that feed is 60-79 per cent of total expenditure and the imported part of the total value of feed varies from 67-98 per cent.

TABLE 5.5.2

Details of 1978 Budgets (pre-tax) of Five Commercial Piggeries on Rarotonga[1]

Grower	(A)	(B)	(C)	(D)	(E)
Current Assets ($) TOTAL	7,292	4,905	4,537	6,243	5,353
a) Surplus	1,046	740	-	-	-
b) Stock	3,006	1,956	1,245	1,743	2,761
c) Fixed (Building etc)	3,240	2,209	3,292	4,500	2,592
Owner's Capital ($)[2]	7,292	4,202	4,499	5,608	4,139
Revenue (Sales and Growth)	3,619	2,570	5,842	3,310	2,633
Expenses	2,573	1,830	5,880	3,944	3,848
Income	1,046	740	-38	-634	-1.215
Feed Costs TOTAL	1,539	1,315	4,288	3,122	2,464
Feed as % of expenditure	60%	72%	73%	79%	64%
% of feed imported	77%	74%	98%	67%	78%
Labour costs: paid labour[3]	nil	nil	884	175	150
Family labour (est.)	750	600	550	750	700
Productivity: sales & growth/ $100 avge. breeding stock	302	428	730	414	240
Labour efficiency: S & G/ total labour	$4.80	$4,30	$1.10	$3.60	$2.90
Feeding efficiency: S & G/ feed costs	$2.40	$2.00	$1.40	$1.10	$1.10
OVERALL PROFITABILITY (income minus family labour & interest on avge. capital)	+156	+128	-728	-1,581	-2,028

Notes on Table 5.5.2:

1 Source: Data were collected by the author and Taukea Raui (APU) during interviews with growers in January, 1979.

2 Returns (income) to growers' capital varies from 14% for grower A to minus 29% for grower E.

3 Costs of family labour are not included in the income budgets, but are included in the calculation of overall profitability and the calculation of labour efficiency. It can be seen that despite capital investment and high costs, other than labour, labour efficiency is closely related to profitability and feeding efficiency (more closely than productivity).

Local feeds can be used to substitute for imported feeds. Two pig keepers regularly fed cassava to their pigs. They were not included in the budget survey, which indicated a high reliance on imported feeds among the five growers concerned. One problem with the use of the two best locally-grown starch feeds, cassava and kumara, is the good returns that they usually fetch on the local market. Hotel swill, however, was available in limited quantities, and its use greatly improved the profitability of piggery A. Locally-grown crops are best fed to sows, as they can use these bulkier crops that are lower in protein. A large part of total feed costs are for feeding sows,but dry sows, and particularly cross-bred (imported x local) sows, can be run on grass and fed plantation surpluses, coconuts, cassava and small amounts of protein meal. There was a trend for growers to try to cut sow-feeding costs in these ways. Electric fences were used, with some limited success, to graze dry sows.

Until the Cook Islands have their own processing plants for either copra or fish - both of which produce by-products that are high in protein - there is little hope for a fully constituted local feed. However, it is important to note that a high proportion (circa 75%) of imported proprietary feed is, in fact, starch. The piggery group will be in a good position to contract with large local growers (the Enuamanu Inc. was proposed as a source) to provide bulk starch from cassava or possibly maize. This starch could be mixed with imported protein meals to provide a cheaper feed with a high local content.

Some effort was made by pig keepers to obtain cheaper imported feeds during 1978 and 1979. They asked the Government to investigate possible imports of meal from Fiji and American Samoa rather than New Zealand. Regular shipping is the main problem in obtaining feeds from these sources. Proposals were made by the pig keepers that they, rather than the Ministry of Agriculture, should handle their own feeds from the wharf, thus reducing handling costs. But feed prices continued to rise, although in 1979 a new company - formed in Rarotonga to sell frozen meat - was able to obtain cheaper feeds for the pig keepers, who continued to buy these feeds individually rather than as a group. Some increases in pigmeat prices were obtained to compensate for rising feed costs, with the price moving from around 70 to 90 cents per pound liveweight in 1979, yet high feed costs have continued to be a major concern of all the pig producers.

To understand the attitudes of the pig keepers to their piggeries, I looked at their reaction to 'feed' as their 'number one' problem. Imported feeds remained the major on-going cost. Most of the pig keepers took a casual attitude to the purchase of imported feeds. They usually purchased meal only when they had cash on hand from other income sources, or when some stock was sold. Although from the outside this somewhat 'hand-to-mouth' approach was undesirable for the operation of a successful venture, it must be understood in the context of developing entrepreneurship. The transfer from low input/output operations to fully commercial, intensive ventures was being made very rapidly. There was originally little understanding of basic concepts such as growth rates, optimum feed rates and feed conversion ratios. The few more successful pig keepers soon realised that they had to take pigs to a high weight as quickly as possible to make a good profit. In comparison were those men who continued operations with a mixture of high and low inputs, inconsistent feed programmes and poor overall performance. Three of the piggeries built became virtually non-operational as business enterprises, with a few local and mixed-breed pigs fed on local feeds in rather expensive housing.

Appreciation of technical problems appeared to be clearly related to an understanding of basic business principles, with, once again, the more successful pig keepers accepting new ideas most readily. A variety of managerial and animal-health problems were evident in addition to feed. Mange was often evident, although it was solved relatively easily by spraying with insecticide. Intestinal worms, iron deficiency and baby-pig scours also occurred. Suitable medications were available at either the Ministry of Agriculture or the Rarotonga Pharmacy, but they were expensive. Dramatic results were often obtained with medications, however, rapidly reinforcing their utility to those growers who used them.

Family labour is the most common labour input to the piggeries (see Table 5.5.2). Generally, the labour used is part of the household concerned, including younger children and relatives staying in the household. Children help clean and feed the pigs after school, as part of their daily house and plantation chores. This situation

is little different from other households, where children are frequently responsible for going into the 'bush' to feed the family pigs. Paid labour was, however, used extensively in two piggeries and regularly in another. In only one case was a labourer hired solely to clean and feed pigs. In other cases the labourers were hired primarily for plantation work and also helped in the piggery.

At times, casual labour was employed. Large inputs of casual labour were required for specific purposes such as building pens and, more frequently, for killing. For these peak labour demands, several pig keepers often preferred to hire labour than to activate kinship networks. Proposals to build a group-operated abattoir, as discussed in the next section (5.6), were therefore important, for in this way killing could be more easily accomplished using hired labour. Among entrepreneurs, there is a slow move away from a total dependence on family labour.

To summarise, developments among the fourteen men with intensive piggeries were characterised by the amount of entrepreneurship that they displayed. Differences became apparent in the attitudes of the pig keepers towards adopting an approach necessary for success: willingness to regularly pay high input costs, readiness to accept improved management techniques, and openness to change customary ideas about marketing and labour. While some men appeared initially to accept the full ramifications of intensive management when they built a piggery, and perhaps purchased new stock, they were unable to continue this interest in the face of necessary changes to their beliefs and lifestyles. It was the former men, those who were more 'successful' who were active in pursuing collective solutions to problems. This became most apparent with respect to marketing.

5.6 Marketing Problems and Collective Responses

As the pig keepers faced the numerous problems of their new enterprises, they had a continuing interest in creating a formal organisation which could assist them to achieve their objectives. During 1978, some members of the original Takitumu Piggery Company had several meetings and discussions on the future of their industry. There was a strong demand among these growers for

government assistance, particularly for feed subsidies. However, direct subsidies of feed imports have debatable national utility. Tax relief was also sought, but presented a problem because some of the piggeries were quite profitable and with better management the others could have been made more profitable. These growers, being articulate and having access to the administration, were in an advantageous position to lobby for assistance such as subsidy, tax relief, credit, technical and managerial information, and also market protection. The Government placed duties on imported pig meats and, in line with their policy of supporting growers' associations, encouraged the pig keepers to form an association.

As production improved in several of the piggeries during 1978-79, new problems emerged. Killing, storage and marketing facilities were required to tap the potential demand for a steady, well-priced supply of meat for hotels, restaurants and shops. An understanding of this market was important to the analysis of the reactions of the pig keepers and I conducted an extensive analysis of it. Previous estimates of the size of the local demand for pigmeat were 9,000 kg. for 1976 (Bewg, 1976) and 23,000 kg. for 1977 (Cornes, 1977). Demand appeared to be expanding, particularly as new hotels and restaurants were established, but there were no accurate figures on which the growers could base their production plans. Market surveys were consequently conducted by myself and Tinirau Tamarua (Livestock Officer) in June 1978 and August 1979. Detailed estimates of current and peak usage were obtained from the major outlets, which comprised the Government Freezer, Rarotongan Hotel, supermarkets and several restaurants. (Peak demand occurred for two months each year - during Christmas and the Constitution Celebrations in July/August). The surveys provided demand estimates of 33,000 kg. in 1978 and 42,000 kg in 1979.

Production clearly did not meet demand in 1978, but by 1979 the situation had become more complex. The operation of the Government Freezer, a major outlet which had proven to be unprofitable, was transferred to private enterprise. There was a period when the new frozen-foods company was installing new freezers and this outlet was then unavailable. The growers foresaw the problem and approached

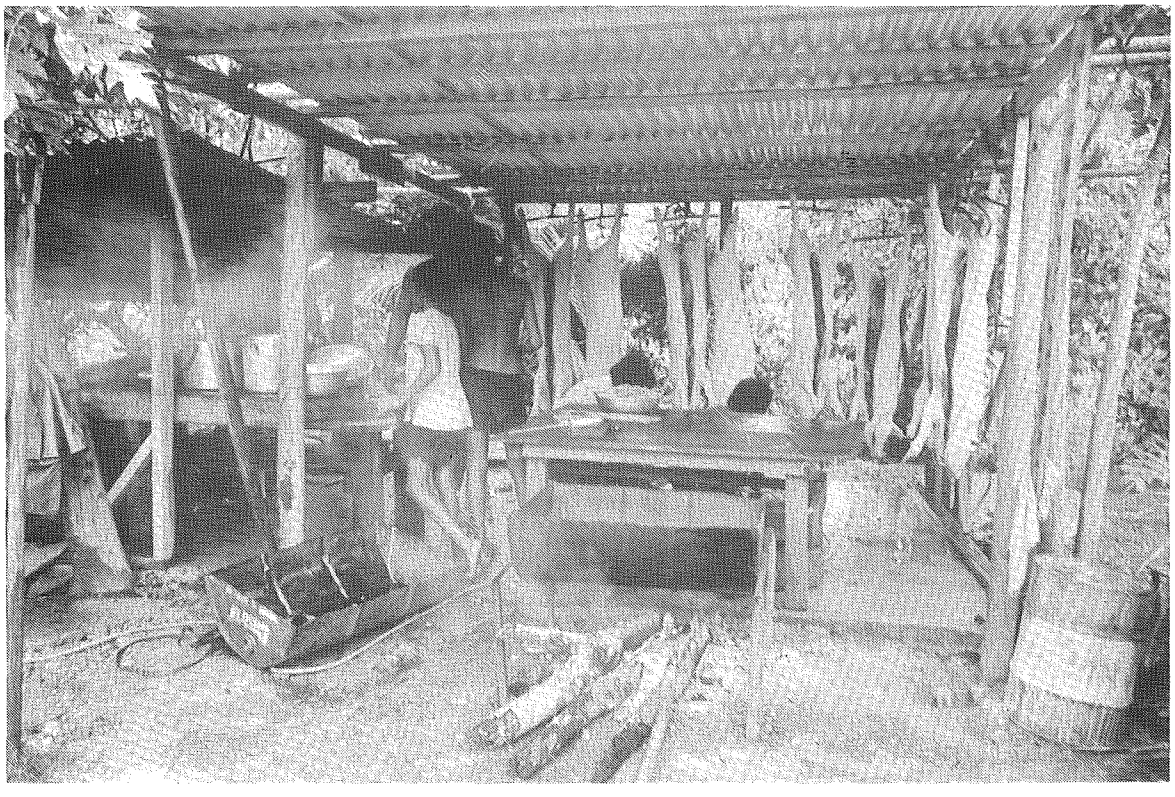
the Government, who arranged that, before closing, the Freezer would accept all stock ready for or approaching slaughter. After opening, the new company took some stock, but the growers were not satisfied with the prices being offered.

As output from the piggeries improved during 1979, situations of periodic under and over-supply occurred. After the bulk sale of pigs to the Freezer, there was a period of under-supply, because in addition to the 'formal' market surveyed there were large sales made privately from the piggeries. When the Freezer closed in July, 1979 there was the usual period of high demand for pigs which are used in feasts to entertain tere parties and family visitors during the Constitution celebrations. (I estimated private sales for the celebration period at 2,500 kg. with a total of up to 10,000 kg. sold privately each year). Later in the year, a glut of pigs was apparent. Therefore the pig keepers could see the need for more effective and organised supply procedures, and the building of an abattoir seemed to provide an opportunity to make improvements.

Demand among the public for private sales was important; it appeared to be increasing as more people accepted the idea of purchasing feast foods. Also, whereas around 25 per cent of the 'formal' market was for smaller, umukai pigs, the bulk of the 'informal' market was for these smaller pigs - with the exception of a few sales to individuals who bought pigs for home freezing. Yet, as suggested in section 5.5, direct sales of smaller pigs present difficulties in obtaining necessary premium prices, as purchases are often made by relatives, friends and aquaintances. This was another strong incentive for organising a new marketing system.

During 1979, difficulties also developed with marketing to the Rarotongan Hotel and one supermarket. These outlets refused to take stock that was not killed in a licensed abattoir and they began to import their annual requirements of approximately 13,000 kg (30 per cent of the formal - market). The hotel management also preferred to obtain a constant, guaranteed supply, either from one large supplier or from a group of suppliers. But lack of a

Killing pig for feast, Aitutaki, 1979



'Home abattoir', Rarotonga, 1979

certification system remained the major problem for the Hotel. Under public health regulations all meat killed for sale should have been inspected by public health inspectors. Properly trained officers were available. While not all growers followed the inspection procedures, which were not strictly enforced, some began to avail themselves of the service to try to improve their market prospects. A proper killing facility remained an urgent consideration, however, as the Hotel insisted on buying meat killed in licensed conditions.

A final, but important consideration in the developing market for pigmeat was the demand for processed products: bacon and ham. Pork imports during 1977 (3000 kg.) and 1978 (1,200 kg.) were very small, a high proportion being part of meat-pack imports by expatriates, but there were significant imports of bacon and ham in 1977 (10,900 kg.) and 1978 (8,800 kg.). Most of these imports were made by hotels and Air New Zealand, the rest being in private orders. The fall in imports appears to indicate a market that is limited by consumer resistance to very high prices and a lack of any major growth in tourism. Some limited efforts were made locally by shops and growers to process ham and bacon, although they reported resistance to high prices that resulted from high production costs. The larger producers however, could see there was clearly potential for a processing plant, and this was an important aspect of the commercial proposals that were made in 1979.

Following the request by producers in late 1978 for tax relief and other government support, Raui reported on the state of the pig industry and the best directions for future development and assistance. His main recommendations concerned the "establishment of a central abattoir, by which prices and quality control would be centralised (1979:5.1). Raui recommended that the pig keepers should form a Pig Producers' Board which would establish a grading system and price structure, manage the central abattoir and generally represent the producers. In addition to advisory and technical services, the Government were to support the Board by introducing legislation to ensure that all pigmeat sold to public outlets should be killed in a licensed abattoir. This legislation would effectively give monopoly power to growers producing through the abattoir.

Subsequently, in March 1979, the Ministry of Agriculture prepared a Project Proposal (A/79/3) for "Construction of an abattoir, plus equipment". Total proposed cost was $34,340, and the project was submitted for New Zealand aid. The abattoir was to be operated by a Pig Producers Association (yet to be formed), but the Government was forced to reject the proposal because of the high demand for aid funds to finance other projects and the large budget deficit. Members of the Pig Producers' Association were to contribute the land for the abattoir and working capital of $10,000.

In the absence of a satisfactory government scheme, the pig keepers began to consider other commercial approaches to the major problems of killing and marketing. Two different group schemes and several individual schemes were proposed for killing, processing, curing and retailing pork, and also imported meats, and for purchasing feed in bulk. The most costly scheme, with capital requirements of over $100,000 was to be based on local ownership and operation, including past members of a small meat-processing factory that had previously folded. Major loans were to be obtained from the Cook Islands Development Bank (CIDB). It was intended that sale and processing of pigmeat would be only part of the company's interests, which were to include importing and processing of sausage meat.

Another proposal involved a smaller capital outlay of around $35,000 to establish an abattoir. Pigmeat processing was planned and, in addition to local pork, imported frozen meats were to be sold through the new retail outlet. This scheme revolved around a suggested 50 per cent partnership between the pig keepers involved and a New Zealand butcher, who was to provide technical and managerial skills. Both the CIDB and National Bank of New Zealand were suggested as sources of capital, and assistance was also to be sought under the New Zealand Pacific Islands Industrial Development scheme which assists New Zealand businessmen to locate businesses in the Pacific area.

There was some interpersonal animosity in the discussions between pig keepers over these two rival schemes. Some of the divisions were 'politically' based. In the resulting uncertainty at least three of the pig keepers formed their own individual plans to build small killing facilities and carry out processing of bacon and ham.

The discussions surrounding the proposals were illuminating, but of most relevance was the situation emerging at the end of 1979. Five men from the most successful (profitable) piggeries were tending to group together, with operations distinguished by their new perception of the piggeries as businesses, which combined high-cost inputs with modern management techniques. In contrast were the pig keepers who were having difficulties through buying feed on an irregular basis as cash came to hand, selling pigs at a low weight due to social pressure, and not following management advice. They are unlikely to take an active part in operating any entrepreneurial group.

To summarise I have found that the concept of an entrepreneurial group was useful for analysing the development of the commercial piggeries. By using this concept, it is possible to explain more clearly the trends towards centralised marketing and management and vertical integration of activities. Intensive pig keeping makes new demands on individual entrepreneurs and the basic family-farming unit. These demands cannot be met completely by the capital, labour and skills that are available to each productive unit. At the same time, external persuasion to form a loose association of producers was not successful. Moves towards formation of a group appeared to originate from the special demands of the piggery enterprises and the particular inclination of individual growers to find their own solutions to economic organisation. It was not clear at the end of 1979 what would be the final composition of the group activities, but it was clear that some new organisation was required to ensure survival of the individual growers.

5.7 A Conclusion on Entrepreneurial Activity

Entrepreneurial activity is vital to economic growth in an underdeveloped country such as the Cook Islands. Entrepreneurs, both individually and in groups, provide a strong impetus for social change. Through their mobility, both within the islands and to metropolitan centres, entrepreneurs act as brokers between 'traditional' and 'modern' ways. They demonstrate imagination and ability in developing new crops, technology and economic organisation. They seek and hire management advice, attract capital from commercial sources and refine

their own approaches to organising labour, management and marketing. Entrepreneurs bear many risks in bringing together development resources and promoting economic change. They therefore play an important role in stimulating economic growth by and for Cook Islanders themselves.

Planned support for entrepreneurs will usually involve indirect inputs such as the development of infrastructure. In this respect, credit facilities and management advice were the two most important services that were inadequately supplied. With agricultural credit under several organisations - the PPMB, Ministry of Agriculture, CIDB and National Bank of New Zealand - there was no coordination of credit services, and many growers were confused.

In 1980, however, the CIDB made some progress towards becoming the central credit facility. The Bank received external aid from New Zealand, and the Asian Development Bank has made large loans through the local organisation. It is useful to note that despite efforts to broaden lending to outer islands, the bulk of the CIDB lending has been made on Rarotonga. Total bank lending from 1977 to March 1979 amounted to $436,688 in 61 loans: 64 per cent of all loans and 86 per cent of total lending was allocated on Rarotonga (CIDB, 1979). Credit organisations tend to support centralisation of commercial development.

Smooth operation of agricultural credit requires a knowledge of farm-budgeting techniques among growers. This is rarely the case. The provision of credit must be matched by an educational programme covering the basics of farm management and economics. Officers of the Development Bank and Ministry of Agriculture were not trained or encouraged to provide wide-ranging management advice to growers, nor was there any institutional support or advice for people wishing to establish small businesses. Most entrepreneurs turned to professional lawyers and accountants. Greater support for small local businesses might allow some balance against the larger, often overseas-controlled, commercial operations.

Another important requirement was for suitable and efficient technical-advisory services. Entrepreneurs often vigorously sought technical and managerial knowledge, and quality of supply, rather than persuasion, is important in the provision of extension services

to them. Frequently, horticultural growers and pig keepers expressed their dissatisfaction with poor information services. Their solutions included their own 'trials', pursuit of advice from commercial sources such as seed and chemical companies, and close questioning of a variety of overseas visitors who appeared able to provide technical information. Despite these efforts, there were cases of real inadequacies both in technical and managerial matters; for example, in the design of the expensive concrete piggeries. After building their piggeries several growers had to make modifications to allow for waste disposal, and one had to raise his roof as it was too low to allow easy access for cleaning and feeding.

Although most pig keepers professed to keeping new technical 'discoveries' secret, there was considerable communication between them. 'Inspections' of other piggeries were often made, and on several occasions I noted pig keepers explaining technical points such as mange and worm control or feeding strategies to each other. A degree of rivalry existed between the more successful pig keepers, both on a personal level and for markets on occasions of over-supply, and this rivalry affected attempts to form a collective approach to solving problems.

The pig keepers were attempting to establish new business operations in conditions which appear common to 'developing' economies: an imperfect supply of capital, and of technical information, and an absence of organised internal markets. In addition, there is heavy dependence on importing major inputs: feeds, stock and materials. Also, numerous social constraints exist, including the nature of family labour and the use of pigs for exchange and feasting. There was no way, however, by which back-yard pig production could have been rapidly expanded to fill the new demands for lean pigmeat, although there remains potential for increasing household production (see 8.5).

Entrepreneurial growth poses a number of social issues for development planners, mainly with regard to income distribution and the need for decisions on the nature of the basic social unit of agricultural production. New types of organisation which involve a collective of entrepreneurs are of vital interest. Present policies of the CI Ministry of Agriculture (1979) have stated that the family

farm will be the basic unit of production. But it is clear that the household, even if it is one which is very entrepreneurially oriented, is an inadequate organisation for conducting many facets of marketing and other large-scale operations. In chapter four, associations are discussed as a solution to this problem, and the entrepreneurial group is discussed in this chapter. Clearly, the latter holds many prospects. Group organisation, properly supported, might allow household units to continue as the productive base while providing other organisational benefits. The alternative, in the case of pig production and possibly for other types of production, will be for one or two large producers to dominate the market. Monopolistic production, in any form, presents important questions about the control of resources and markets.

At present, agricultural entrepreneurs, the pig producers and larger horticultural producers, have made relatively high-capital investments with low, and often negative, returns. Support must be given to their endeavours, but their success will inevitably lead to problems concerning the distribution of income. There are already clearly identifiable discrepancies in levels of income, expenditure and life style between the non-agricultural commercial owners and managers, professional people, top administrators and expatriates, and the majority of people, who also desire the 'fruits' of development. Therefore it is important that the main purpose of aid and development programmes should be to support wide-ranging rural and regional-development programmes. Unfortunately, as described in the next two chapters (six and seven), those programmes aimed at widely increasing agricultural production have not always been successful, neither improving long-term cash earnings nor social welfare. Particular questions are raised over the past concentration on projects that are export-oriented.

CHAPTER SIX

THE ADOPTION OF AGRICULTURAL PROJECTS

In this chapter, I will first examine ideas about the adoption of innovations (6.1). These ideas involve a mixture of development ideology and theory about the diffusion of new ideas. There is an increasing dependence on outside sources of new ideas, ideas that are rarely adapted for local rural systems (6.2). But new projects have been relatively quickly adopted, although not always for a long term, and case studies are outlined in the next three sections (6.3, 6.4 and 6.5). In conclusion, I discuss aspects of grower motivation and some reasons for a tendency to view cash crops from a short-term perspective (section 6.6).

6.1 Theories of Diffusion: A Challenge

The following discussion of the diffusion of innovations will demonstrate the complex nature of cross-cultural movements of information and the problems of sustaining community acceptance of new ideas. Often the emphasis given to improving extension and advisory work has distracted attention from the actual sources and types of information that are being conveyed to growers. Undue emphasis on the processes whereby innovations are adopted has been most obvious in the body of diffusion theory propounded by Rogers (1962, 1969, 1971). Diffusion theorists have concentrated on the processes of change, often neglecting both the origins of innovations and the full consequences of their adoption by a society. Diffusion theory will be discussed in this chapter through illustrations provided by agricultural projects in the Cook Islands.

Rogers and Shoemaker (1971:8) described social change as being of two types: immanent and contact. Immanent change is generated within a society with little or no external influence. Change by

contact can be either selective or directed. Selective change occurs through demand within the society, usually a demand that originates from 'innovative' people, who are followed by others. Directed change results from an outside perception of economic, health, political and other problems. Directed change includes aid programmes and many examples of political, theological and similar interference from outside. This chapter is concerned with change by contact and often by direction.

Using the early terminology and approach of Rogers, the village 'peasant' was regarded, in 'theory', as being resistant to change; the degree of resistance depending on such variables as village organisation, levels of literacy and modernisation. Fatalism was defined as the major barrier to change and as a concept tended to demonstrate a highly ethnocentric view of 'peasant' culture. "Why are peasants fatalistic?" asked Rogers and Svenning (1969:274). "One reason is that they have a relatively low degree of mastery over their natural and social environments". These authors reasoned that "Peasants lack the knowledge, skills and resources necessary to cope with phenomena such as droughts, floods, and famine. The causes of these are looked upon as a visitation from the gods or evil spirits, whom man can propitiate, but not control" (ibid.). Fatalism was regarded in these arguments as a self-perpetuating barrier to change. New, unfulfilled expectations therefore cause further entrenchment and increased frustration.

Diffusion theorists have ignored the well-documented, fatalistic attitude of people in 'modern' societies with regard to natural disasters: location of housing and farms in flood-prone areas, for example. These theorists have also ignored the high degree of mastery of the biological-physical environment that is shown by many 'peasants'. 'Peasant' horticulture in the Cook Islands, for instance, exhibited numerous technical skills and extensive knowledge for coping with natural disasters such as drought and flooding (skills discussed in chapter eight). Also, the agricultural projects examined in this chapter show that the Cook Islanders have had a surprising ability to maintain their unfulfilled expectations and an openness to new ideas in a series of situations that, according to diffusion theory, would be bound to cause entrenchment and fatalism.

Ponter (1975:38) criticised the concept that people resist social change and suggested an opposing generalisation that change is "ubiquitous". Ponter considered that the notion of resistance to change may be an inevitable consequence of planned development. Ideologies of development planning often emphasise resistance rather than acceptance, and also "quantity" rather than "quality".

Holden (1972) has also criticised the preconceived notion that 'peasants' have a negative attitude towards new ideas. Following Holden's paper, I suggest the following premises for further examination.

a) The concept of adoption is usually linked to an ideology of greater production and efficiency. This ideology assumes that there will be positive valuestowards profit motives and 'rational' decision making. In contrast, I will discuss here short-term interest, opportunism and attempts to minimise inputs of production.

b) 'Adoption' must necessarily involve complexities of social change. For instance, adoption of chemical fertilisers requires cash, credit, middlemen, crop-accounting, storage and transport, etc. There is therefore a need for rural infrastructure to back up newly adopted innovations, a need which has frequently been neglected.

c) 'Modern' sociologists are used to multiple information flows. However, in many developing countries, where 'modern' communications are poorly developed, communications channels can be seen by growers to be unreliable. This local view of communication is often neglected.

d) Diffusion research lends itself readily to empirical (statistical) analysis and is therefore used by the positivist school of social theorists. The material presented in this chapter shows that the principles of diffusion theory are not necessarily completely wrong or useless, but that they need to be modified by a wider theoretical perspective. This perspective is made necessary by the dynamic and complex nature of social change and the problematical mixtures of ideology and

> theory that have occurred. Such a broad orientation is available through the use of more then one theoretical paradigm (Ritzer, 1975) and particularly suits the view of cultural adaptation provided in this dissertation.

New approaches to development have accompanied critiques of diffusion theory. Rogers (1976) himself has subsequently discussed "the passing of the dominant paradigm" of development, a paradigm based on the ideology of economic growth and the increasing use of capital-intensive technology. 'Modernisation', through improved communication systems, was seen by many development theorists as the key to adoption of new production methods. Rogers (1976:124) notes that "quantification" was an important part of the ideology of growth. Economic development could therefore be planned and accomplished in dollars and cents. The process of social change could be measured and described as rates of adoption. Scientific models of development were therefore predominantly concerned with those causes of underdevelopment which were internal - particularly 'traditional' social life, political systems, land tenure, etc. - rather than the external causes. By 1976, Rogers had redefined development as a more "widely participatory process of social change in a society...", with an emphasis on autonomy and equality in the distribution of social and material advances (1976:131).

Communication of innovations can no longer be viewed as a top-down process of persuasion. As Rogers (1976) indicated, interpersonal communication has often been neglected. Also, social structure has been shown to limit development to certain groups. Communication research is therefore now being oriented towards "self-development" at a "local" level (ibid.:140-141). The future role of mass communications technology such as satellite facilities will consequently have to be critically assessed, especially their role in supporting the status quo. In the Cook Islands, satellite communication is now being used for university courses from the USP and for many other regional-communication activities, including seminars and technical consultations, which can assist progress towards greater self-reliance in technology. Whether this development can expand to include widely-based participation by rural people is a central question for planners of communications.

Proponents of diffusion theory have given major consideration to the speed with which a new innovation moves among the "clients" of the "change agents". Agents of change are very concerned with the time taken for their clients to become aware of an innovation and then the time taken for the clients to adopt it. The time between awareness and adoption is known as the innovation-decision period (i.d.p.).

> The importance of the innovation-decision period to change agents is thus highlighted; shortening it is one of the main methods of speeding the diffusion among their clients.
>
> (Rogers and Shoemaker, 1971:129)

Rates of adoptions of innovations have often been expressed as a bell-shaped (normal) frequency curve showing the distribution of adoptions over time. This information can also be expressed as a cumulative-frequency (S) curve (ibid.:177). Distribution of adoptors over time is used to classify them into five categories: innovators, early adopters, early and late majority, and laggards. The rate at which potential adopters become aware of an innovation can also be expressed using these two types of graph (ibid.: 131).

Case studies of adoption of agricultural innovations in the Cook Islands (sections 6.3, 6.4 and 6.5) demonstrate a pattern that does not correspond to the normal or cumulative frequency curves established by Rogers. The changes described in these studies would be classified by Rogers as directed contact change. I refer to them as projects. These Cook Island projects appear to include at least two phases: rapid (early) adoption of a new technology, followed by a longer-term period when the new technology is either integrated with changes in social organisation or rejected.

The first important characteristic of the Cook Island projects is the speed with which the initial phases were adopted. Rogers and Svenning (1969:293) described community innovation-decision periods of over thirty years for 'modern' technology in Columbian villages. Average innovation-decision periods for agricultural technology - quoted by Rogers and Shoemaker (1971:129) and Bollard (1977:85) - range from 3.8 to 9.0 years. Assuming that the spread of awareness on a small island is very rapid, the average i.d.p. for the Cook Islands

is six months to two years. This is presumably close to a minimum i.d.p. given infrastructural constraints such as distribution of planting materials or equipment. In these projects, the speed of innovation decision making is of little concern for the "change agent" compared to the problems of maintaining long-term enthusiasm and interest in the projects.

The second characteristic of the Cook Island projects is their negative aspect. None of the curves and graphs drawn by diffusionists such as Rogers show a negative factor. Cook Island projects are characterised, not only by rapid rates of adoption, but also by a correspondingly consistent decline in grower interest after the initial adoption. It is therefore necessary to reorientate emphasis from the adoption stages of agricultural projects to the problems of maintaining the impetus of the projects in the longer term, and relationships between the project and changes in social structure. This problem appears to be of particular concern to agriculturalists in the Cook Islands, but the problem may also apply to other places where social change and new expectations have already formed a significantly increased demand for cash income and material wealth.

When examining changes in the Cook Islands, it is important first to consider why the growers are not particularly resistant to new technical ideas. Diffusionists consider that resistance (caused by traditional village social life and fatalistic attitudes) is broken down by literacy, exposure to mass media, empathy - perspective beyond immediate cultural surrounds - and 'cosmopoliteness'. Although cross-cultural comparisons are extremely difficult, many Cook Islanders would appear to rank highly on these variables.

The Dominion of New Zealand Population Census (1945) provides some information on literacy prior to the period of the agricultural projects. While the survey method was not described and literacy is not defined beyond "reading and writing", the figures show that, of the total population that was ten years old and over, 44 per cent could read and write English and 97 per cent could read and write Maori. These figures probably represented attendance at primary school rather than full literacy. Today, school is compulsory for children aged

six to fifteen years, and there are high levels of literacy. Most homes have access to the mass media. Radios are common, and all the islands in the Southern Group receive clear reception from Rarotonga. There is one daily newspaper and three weeklies on Rarotonga. Some copies reach the outer islands. Generally, cosmopoliteness and empathy would be high for small, isolated islands. Tere parties (travelling groups) to and from New Zealand and further afield, overseas schooling, circular migration, a high level of expatriate manpower and tourism all contribute to an openness towards new ideas.

However, technical change cannot be isolated from other social changes within a cultural system. Cohen (1968:58) for example, has conceptualised culture as a series of subsystems which can change at different rates in relation to the environment. Technology and political organisation can thus be seen to be of primary importance in those areas (cultural habitat) where culture interacts with an environment. Concepts such as "cultural core" or "base" also have utility (Steward, 1955). The stability of changes may vary according to the cultural subsystem which is most affected. Hence, new technology may be adopted faster than new kinship systems, but, consequently, technical changes may not endure. The Cook Islands agricultural projects illustrate this point.

6.2 Knowledge Dependence

Allen (1976) has reviewed and studied innovation in Papua New Guinea as a movement of information between a 'core' and its dependent 'periphery', and he recorded breakdowns in the reception and perception of information in the 'periphery'. People accepted innovations because of their erroneous belief that this was the path to autonomy, not to greater dependency (1976:310). The concept of knowledge dependence can also be applied in the Cook Islands.

For technical information in agriculture, the Cook Islands have become increasingly dependent on sources based in outside centres: New Zealand, Australia, The Netherlands, The United Nations, and also in the Islands particularly in Fiji, the French Territories and Western Samoa. Information obtained ranges from details of plant pathology

to marketing data. In some cases, technical knowledge is gleaned by Cook Islanders travelling overseas and passed to the growers through a variety of channels. In the majority of cases, however, information enters the Cook Islands through established channels such as books, periodicals, papers, reports, satellite services, post and telegraph, radio, etc. Much of this information reaches growers only indirectly, through such intermediaries as agriculture officers, teachers and other growers. There are also cases when expatriates disseminate information personally, usually through government departments but also through meetings and other direct contacts with growers.

It is important to note that there is a much smaller reverse-flow of information. Expatriates obtain some knowledge and experience of the Cook Island environment (both biological and social), and this knowledge must eventually modify the flow of information from expatriate sources.

Government policies affect the nature and amount of information that becomes available. Both local and external governments fund research organisations, movements of personnel and many of the information services. Expatriate governments can have great influence by emphasising one particular aspect of information or technology. Recent expatriate postings in the Cook Islands to implement aid plans include agricultural economists and farm managers from The Netherlands, pineapple agronomists from the United Nations, and advisors on departmental organisation and extension from New Zealand. The influence of outside governments has been an important aspect of knowledge dependence in the Cook Islands. When evaluating projects, the Cook Island Government has had to be mindful of the type of development that the sponsor will support. At the 'personnel' level there can be a strongly-biased interest in particular crops and projects. Overall, export crops have been emphasised and domestic food production neglected.

Locally, Albert Henry's government placed considerable importance on the 'traditional' export crops of citrus, pineapples and bananas, while more recently the government of Dr. Davis has emphasised new crops such as speciality horticulture - including flowers and fresh fruits - and the revival of crops such as copra and coffee.

Knowledge dependence increases because changed expectations and values place an increased demand on education and new ideas from outside sources. In turn, there is an accelerating demand for technical change and further new ideas. The Cook Islands are decreasingly able to meet these demands themselves, and greater emphasis has to be placed on outside sources of knowledge and personnel. In 1976, for example, only 13 of the 60 university graduates working in the Cook Islands were Cook Islanders (CI Statistics Office, 1977).

Numerous problems have arisen through the presence of expatriate technologists in the Cook Islands. These 'experts', often highly paid, have been widely criticised for their role in agricultural development, a criticism that can be linked to a more general critique of technical aspects of development. Technical change can occur at the expense of other aspects, e.g. "psychological, social, cultural and political", as listed by Crocombe (1977b:35). Experts are berated, often quite legitimately, for their role in replacing local expertise or undermining local confidence, causing more problems than they solve, and for grossly misunderstanding the local environment and culture. Neglect of Maori perceptions of development is examined more fully in the next chapter (seven).

I found there are generally three problems involving the expatriate and local officers:

a) The expatriate's knowledge is inadequate, usually on matters concerning local implications of technology, but increasingly on direct technical aspects.
b) There are 'schools of thought' conflicts caused by different backgrounds and training, where the ideas of both the local officer and the expatriate can be valid.
c) The expatriate has useful knowledge, usually on technical matters, but sometimes through an 'outside' perception of a problem.

Expatriates are often seen by the growers to have 'superior' technical knowledge when compared to the local officers. One grower expressed this attitude as "You people are doing all the work for our

guys". In deference, a local officer often supports an expatriate, at least in his presence. However, when the expatriate - who is usually on a short-term contract - departs, the local officer is left in a double bind: he is unsure of his own ideas in relation to those of the expatriate, whilst the grower is unsure of the validity of the local officer's ideas when he compares them to the confident superiority of the expatriate. This uncertainty contributes to widespread mistrust of the advisory services. For information, the growers turn in preference to any expatriate available, while the confidence of the advisory officers drops even further.

An example of the difficulties in extending some types of information was provided by the case of a new agricultural chemical called Sumicidin (10% fenvalerate), used for control of diamond-back moth on cabbages.

During the 'winter' of 1978, the growers throughout the Southern Islands had expressed anxious concern over the devastating damage caused to cabbage crops by the diamond-back moth. At the same time, consumer demand for cabbages had increased steadily and the price had risen rapidly. Cabbages air freighted from New Zealand sold for up to $2.50 each. Use of the common insecticides Malathion (maldison) and Dysol (diazinon) had fallen into disrepute, and growers commonly referred to insect 'resistance' to these chemicals. Some growers resorted to the use of more persistent chemicals, particularly lindane and DDT, and the considerably more toxic Phosdrin (mevinphos concentrate): chemicals which gave obviously effective results.

A trial of Sumicidin (held on the NZDSIR-managed Totokoitu research station during 1978) was visually effective. Clearly, superior results were obtained with the new chemical. Great interest was aroused among the growers who attended a field day on the control of cabbage pests. However, the situation with regard to control of diamond-back moth was more complex than the possibly widespread adoption of the apparently effective Sumicidin. The field day was premature, as the new chemical was not available for distribution to growers in the Cook Islands. Also, so-called 'resistance' to chemicals can be due to irregular or inefficient application, since the occurrence of real

insect resistance generally requires widespread, constant and efficient use of a chemical over a period of years. In any case, without tests to determine resistance, there was no way by which the opinions of the growers could be proven right or wrong by the advisory service. Therefore, further doubt was cast into the minds of growers as to the value of the advisory services. However, this story does have a 'happy' ending (for cabbage eaters). By the 1979 season Sumicidin was commercially available and widely used. There was a glut of hole-free cabbages.

A wide variety of agricultural chemicals is available to Cook Island growers (provided they can pay for them), but growers often have little information about the chemicals beyond what the manufacturers put on the labels, and this is not always clear. Such technical information as ratios of active ingredient or concentrated chemical to volume of purchased spray and recommended spray concentrations is very difficult for any layman to understand. In many cases the new technology, while actively sought, evokes a range of problems. The parts of the agricultural system being adopted are not always properly adapted to the new rural system.

One example of this problem was provided by a grower whom I had classified as 'modern' or 'progressive'. He spoke good English and had had considerable experience in New Zealand, including working on a large kumara crop that had been sprayed with the herbicide paraquat and had yielded well (presumably free from weeds!). The grower had admired this crop and hoped to do at least as well at home. However, like many kumara crops in the Cook Islands, his had been suffering from a severe attack of a leaf-hopper insect, which causes extensive browing and wilting of leaves. For this grower, the obvious remedy was to spray with paraquat, a chemical that he related to successful kumara crops. The crop had been badly damaged by the leaf-hopper, but he showed me evidence of new green shoots, which he attributed to an application of the herbicide. There were few weeds. I naturally rose to the challenge of describing the difference between a herbicide and an insecticide. A biologist would have reinforced this discussion with reasons for the natural decline of the insect pest and subsequent regrowth of the vines, but this grower firmly believed in the efficacy of his actions, and I did not persist in my argument.

Many other misunderstandings of agricultural chemicals are evident. There are important consequences in the misuse of such chemicals:

a) The most obvious is the possibility of damage to environment, health, etc. The death at Christmas 1978 of a man who drank paraquat from a beer bottle was a dramatic illustration of this point.

b) Agricultural chemicals have become increasingly expensive, and all local subsidies were withdrawn. There is a strong economic necessity for efficient use of chemicals.

c) Chemicals are unlikely to work as predicted if they are used incorrectly. Failure in their use serves to reinforce scepticism regarding new ideas and the people who advocate those ideas. Resistance to the use of diazinon illustrates this point.

If technology from outside sources is to be better adapted to the local environment, the role of expatriate advisors and the status of the advisory services must be revised. At the 1978 Totokoitu Research Meeting, Peter Money (NZ MAF) emphasised that expatriate assistants must stay in the 'background', providing technical back-up. Local officers are often not confident to 'front up' to the public through the media, field-days, meetings and grower visits. If expatriate advisers are involved, they need to cooperate on an equal basis, and there have been some good examples of this type of cooperation. In cases where the local officers do not have technical knowledge, appropriate training must be provided. However, staff ceilings and lack of funds have hindered the release of personnel for training.

Growers appear to take a keen interest in ideas that originate through the active involvement of their own officers, but there have been few field trials or demonstrations conducted by extension officers, particularly on the properties of growers. Quick trials with effective results would help to build the respect of the growers for the advisory services,for example, vegetable variety trials and demonstrations of application rates and timing for sprays and fertilisers.

Agricultural scientists should usually have no problem processing trial data into a form presentable to growers if the data solves immediate problems. In rather longer-term work, however, the processing of considerable and diverse data into a form which can be of practical use is much more difficult. One example of this latter problem was provided by the NZ DSIR soil survey (funded under the NZ Aid Programme) of the Lower Cook Group. The field surveys were carried out in 1974/75. Growers and agricultural officers on the outer islands were reminded of these surveys, and the field teams, by a number of yellow trail bikes left behind. They were also aware that no practical results have come through to them from that survey. At a meeting on one island, a group of somewhat resentful growers queried the possible arrival of information from the survey. The growers wanted practical fertiliser recipes for different crops and soil situations.

Fresh approaches to designing and adapting new technology that suits the existing agricultural system are discussed under the Rural Systems Approach in sections 1.4 and 8.5. Previously, most emphasis has been given to persuading growers to adopt parts - and often incomplete parts - of 'outside' agricultural system. Therefore, improvements in extension services have been a principal aim in agricultural planning.

Use of individual, 'go ahead' growers for demonstration of new techniques is advocated by advisers as a good extension device. They maintain that innovations should be passed on to a few growers, who could be classified as 'early adopters'. This method of extension depends on rapid diffusion of the new idea to other growers, through a 'keeping up with Jack' phenomenon, and could be a policy that is fraught with difficulties. Many growers are quite protective of their own knowledge of techniques and ideas and have a suspicion about the ideas of other growers, possibly a habit going back to knowledge of traditional planting lore. Several informants described how different families keep closely-guarded secrets of such techniques as lunar planting. Also, some growers expressed concern that agricultural officers keep new ideas for their own exclusive use. So regular transmission of new ideas to a few selected growers would be bound to cause suspicion among other growers. Suspicions would be further increased because innovative growers can often be classified as entrepreneurs. As income disparity increases between growers, further resentment and suspicion would be most likely to eventuate.

However, this is not to say that good, and for that matter bad, techniques displayed by growers were not used very effectively in extension work. An example was provided by banana officers on Aitutaki. One field day began in a village meeting house. The aims of the meeting were explained by the officers, and they proceeded to describe the main problems currently evident in the plantations. Criticism of the Ministry of Agriculture's work was called for and discussed. Then the participants climbed onto a hired lorry and toured the plantations of each grower. Various management problems were discussed in the field of each grower. The 'tour' constituted a form of tutaka, or inspection. A tutaka is regularly used by village committees and health authorities to maintain a high standard of cleanliness in the household and surrounds, and also to encourage women's handicrafts. In the past, a form of tutaka was apparently used by the chiefs to maintain a high standard of traditional agriculture (Robati and Martin, 1960).

The banana officers did not restrict themselves to village field days. A demonstration/inspection was also held on the plantations of members of the Ministry of Agriculture itself. The officers felt that the members of the Ministry should be setting a high standard. Similar extension work was planned with other government departments and this was proving to be an effective approach, for many banana growers on Aitutaki are government employees.

Extension officers of the Ministry of Agriculture have proven very capable in carrying out effective extension work. What must now be questioned is the total nature of the agricultural systems that have been extended. My studies of the agricultural projects described in the next three sections (6.3, 6.4 and 6.5) bring into question the major emphasis given to improving the advisory services (as outlined by Franks and Collie, 1978). The advisory problem may be over-rated compared to the problem of the type of information being extended and the consequent problem of maintaining the impetus of new ideas after they have originally been adopted. In many cases, as I suggested at the beginning of this section, present dependence on 'outside' knowledge can be directly linked to economic dependence. It is in this framework that the following case studies of agricultural projects should be viewed.

6.3 Case Study: Agricultural Projects on Mitiaro

'Top-down' approaches to agricultural planning, with emphasis on adoption of 'external' technology, have been very evident since the 1940's. A series of agricultural projects, some of which continue today, were instigated as first the New Zealand Administration and then the Cook Islands Government faced demands for rural development. These demands were associated with the rapid social changes and increasing expectations for cash income that have occurred since World War II. Unstable production of citrus, tomatoes and copra supplied insufficient cash income, particularly for those people not working in the government/service sector. It was also necessary for the Administration to promote exports to support a weak national economy. The greatest need for agricultural projects was felt on outer islands, where many projects were subsequently started.

Mitiaro could be regarded as the least 'modernised' southern island. The 1976 population was 305 - less than 100 people were of active working age. Copra has been produced sporadically. In terms of labour supply and attitudes to cash cropping, resistance could be expected to projects introduced in the 1960's. But it is not always difficult to introduce new ideas. The problem is to keep them going. For example, pepper vines and allspice trees were introduced to Mitiaro and widely planted in the 1960's. Only a little pepper was harvested. The picking and drying of both pepper and allspice is time-consuming, and quality control and marketing procedures were not established in advance. More recently, a small fishing industry started and failed. A guest house was opened and handicrafts produced intermittently. There has been no consistent source of cash income from primary production.

Of most interest, is the banana-drying project established in 1969 by a Mitiaro-born agricultural officer who was on the island until 1971. Under the enthusiastic guidance of this 'change agent', a six-bay banana drier was established along the lines of a copra drier fuelled by coconut husks. The aim was to dry an excess supply of the local mario variety of banana. The dried banana was tied into an attractive Pandanus pack and there was a ready market for the product.

It can be assumed that full knowledge of the project had spread throughout the small population while the drier was being built close to the village. The new innovation was rapidly accepted, with optimal adoption in the first year. Interest and production have subsequently failed (see Table 6.3.1).

TABLE 6.3.1

Dry Banana Production: Mitiaro

Year	Weight Dry Bananas	Value Dry Bananas	Price	No. Growers Involved
1970	1,470 kg	966	66c/kg	35
1971	630 kg	418	"	28
1972	464 kg	297	"	23
1973	309 kg	205	"	17
1974	395 kg	180	"	20
1975	89 kg	96	$1.10/kg	10

Source: Mitiaro Admin. files

These figures represent produce sold through the government agent. Some dried bananas were marketed privately, and small quantities have been sold in this way since 1975, but there is no record of these sales. There was no banana production at all after Cyclone 'Charlie' wiped out the banana crop in early 1978. The banana-drier has now fallen into a state of disrepair and would require extensive renovation to become operational again.

Several reasons can be advanced to explain the project's decline. First, growers were discouraged by low prices and returns to labour. Furthermore, payments were made by the government office only after the bananas had been shipped to Rarotonga. Growers prefer immediate payments for their labour inputs, particularly when they are working part time for extra cash.

Inefficient drying methods were a second reason for the fall in production. For three years the growers took their bananas to the Department of Agriculture, who operated the drier. However, this practice was stopped in 1972 due to a lack of interest shown by the

growers. After 1972 the growers took their own bananas to the drier, which is around half a mile from the village. This was too far for the growers to walk frequently to give the small quantities of bananas constant attention during drying. Some growers began to dry their bananas in the sun at home by spreading them on corrugated iron. Others gave their bananas to the CICC pastor, who then had sufficient quantity to warrant drying. Work on drying did not fall easily into the patterns of daily household labour. There is a shortage of active labour on the island and this labour is involved in lengthy daily movements inland, to and from limited areas of food-producing soils. In addition to food cultivation there are many social activities, commonly misperceived by outsiders as leisure time, but in fact activity that is vital to a small community.

Thirdly it is possible that the total banana yield had fallen due to the incidence of banana-stem borers and root nematodes. Also, old areas of bananas were not replanted. Growers practiced only irregular plant selection, thinning and weeding. A fall in production meant that less surplus bananas could be released from household consumption for drying.

The fourth reason for rejection of the innovative process may be the most important, but is also complex. Banana drying involved changes to the whole cultural system as embodied in food production. Bananas are an important basic food crop on Mitiaro compared to the other Southern Islands. For example, my field surveys showed that Mitiaro had only $80m^2$ of cultivated taro per household in 1978. Mauke, another island where most of the agricultural production is for household use, had nearly seven times this area of taro per household. On both islands the average household size for each active planter was around seven people. Mauke also had at least as much kumara, maniota and taro tarua per family as Mitiaro. In addition to limited taro land, there are less than 270 acres of land suitable for root and banana crops on the island. Land tenure further limits land available to some families.

Because of the importance that Mitiaro people have placed on bananas as a major source of their starch requirements, there has naturally been reluctance to make major changes to methods of cultivation, thereby releasing more bananas for drying. In 1978 a visiting

extension officer from Rarotonga, who was attending a funeral, held two field days. There was some interest in new techniques he described. Weeding, thinning of surplus shoots, replanting of old and unproductive areas, plant selection and control of the common stem borer were all explained to the growers. But without continuous encouragement after the officer left, the changes did not endure.

Similarly, a surplus of bananas beyond household requirements could be achieved by producing more of other starch crops, such as taro. Taro is affected by Pythium rot, so efforts are now being made to grow it on dry land. At least five growers adopted this innovation in the week following the extension officer's visit. Growers were enthusiastic, and several new dry plots of taro were planted. No 'dry land' plots were to be seen one year later. The innovation required constant back-up, advice and encouragement to persist within the established patterns and attitudes of land use.

Plantings of other root crops could have been encouraged. Kumara, for example, was widely planted after Cyclone 'Charlie' to fill short-term needs. These additional crops must be encouraged on a continuous basis, however, otherwise areas planted decrease as banana yields recover.

Improved returns of food production per labour unit would effectively release both food and labour for other activities. For example, yields of all food crops can be increased by the use of fertilisers and new varieties. Land cultivation with hand or tractor-operated rotary hoes, herbicides and regular tractor and trailer movements to the 'land' would all increase returns to labour. There appeared to be growers interested in these changes. However, these changes would have to be subsidised through an aid programme, as there is little capital for development on Mitiaro. Credit facilities are also totally inadequate. Aid may be necessary, considering the small areas of fertile land that are available for food crops. Aid programmes are, however, notorious for their long-term failure due to the complexity of the rural system in which they operate.

Rural infrastructure remained weak on Mitiaro, especially in extension services. Full support of agricultural advisors - through

training and supply of useful information - was not available on any of the outer islands. There appeared to be considerable room for improving production from existing plantations through a careful extension programme, and the present lack of such a programme is probably much more important than any apparent resistance to new ideas. One technical innovation following another, however, with insufficient changes in the whole cultural system, may result in a new resistance to further technical change.

With hindsight, one can now see that the Government would have been better advised to initiate and subsidise a copra-replanting programme for Mitiaro in the 1960's. Production methods were well established, and despite fluctuations in production due to price levels, overall results could have been more beneficial in the long term. Paternalistic projects may be necessary, but the costs and benefits have to be assessed from a local point of view. Potential employment, existing labour patterns, future sources of cash income and technical/economic knowledge all have to be accommodated in future planning.

In concluding notes that I wrote on Mitiaro in 1978, I said:

> The most important immediate constraint to the above commercial ventures is not so much either land or labour, as knowledge, and motivation to acquire the new ideas. An increase in banana production requires knowledge of better agricultural techniques and drying techniques. Fishing requires much more information to improve the returns to labour. Handicrafts and allspice production require knowledge of markets and possible returns. Copra, food crops and vegetables require information on fertilisers, varieties and other technical knowledge.
>
> All these ventures are likely to proceed to some extent in the near future, because the new, regular air service has made information and new ideas much more accessible to the people on Mitiaro. Ultimately, motivation to use these new ideas will depend on the perceived utility of the ventures to the individual households on the island. As more opportunities for spending become available the desire to increase household incomes will be greater.

In retrospect, I emphasise that these changes were occurring very rapidly. New information is likely to be quickly assimilated and acted on. Further projects are likely to rise and fall in the absense of suitable planning and the building of rural infrastructures. The

prospects for further rapid adoption and subsequent rejection of a series of projects on Mitiaro, with an accompanying build-up of resistance to change, have been clearly illustrated on a neighbouring island: Atiu.

6.4 Case Study: Agricultural Projects on Atiu

Bollard (1977) has described a remarkable series of agricultural projects on Atiu, and there is considerable background material in his thesis. The distinguishing features of these projects were the speed with which they were accepted by the people on Atiu and their short-lived duration. I have summarised and up-dated Bollard's data in Table 6.4.1. The information in the table is discussed in the following notes.

Notes on Atiu Projects

Citrus

Citrus planting was rapidly adopted under the citrus replanting scheme. This was the basic long-term cash crop on Atiu over the 1950's and 1960's. The figures in brackets represents growers (mainly younger growers) who participated in a citrus "extension scheme" (Bollard, 1979: 83). The 1977 figure is from the APU (1977a) Citrus Survey.

Forestry

Five growers planted "trial" plots of Albizzia in 1951, and by the next year 250 growers had applied to join the scheme, which was based on the production of timber for box-wood and sawn timber (Bollard, 1977, II:21). Jolliffe (1953) explained that growers regarded the installation of a sawmill as an integral part of the scheme, and failure to provide this type of long-term infrastructure soon discouraged the growers. The trees grew well and were cut for local use, and later to clear land for other crops (e.g. coffee). In 1979, a European man married to an Atiuan, began to operate a small sawmill on Atiu.

Tomatoes

Large losses of this fruit were encountered due to its perishability and infrequent, irregular shipping to the New Zealand market (Bollard, II:123).

TABLE 6.4.1

Grower Participation in Atiu Projects

Year	CRS[1]	Forestry	Tomatoes	Peanuts	Coffee[2]	Taro	Pineapples	Vegetables	Min. No. growers participating
1950	22								
1951	81	5							5
1952	102	6							6
1953	155	21							21
1954	158	44							44
1955	160	?	84						84
1956	162	97	104						104
1957	164	108	152	26					152
1958	"	?	9	133					133
1959	"	128	16	174					174
1960	"	131	12	113					131
1961	"	131	4	25					131
1962	"	?		-					?
1963	"(1)			-	15				15 [3]
1964	"(1)			126	84				126
1965	"(7)			-	118				118
1966	"(21)				173				173
1967	"(35)				163				163
1968	"(40)				97	0			97 [4]
1969	162(41)				52(10)	13			52
1970	150(42)				(23)	19	7		52
1971	137(45)				(10)	72	8		72
1972	135(41)				(36)	68	8		68
1973	135(36)				(11)		6		52 [5]
1974	131(32)				(13)		2	25	25
1975	163+				(5)		1	12	12
1976	"				(3)		1	8 est	8
1977	187				(2)		3	"	8
1978	"				(2)		6	"	8
1979	"				30(12)	35+	18	"	35+

Sources: Bollard (1977), Admiraal (1978), APU Citrus Survey (1977) Jonsay (pers. comm., 1979).

Notes:
1) Citrus - Figs. in parentheses represent additional participants in a citrus 'extension' scheme, combined after 1975.
2) Coffee - Figs. in parentheses show no. growers producing in that year; 30 were rejuvenating/planting in 1979
3) Pepper proposed, 57 growers interested
4) Soyabeans proposed, 45 growers interested
5) Up to 75 labourers employed on pineapple Inc.

Peanuts

Many technical problems were encountered, particularly weed control, hand-harvesting, rat damage, drying and marketing. A new Resident Agent revived the crop in 1964 with new seed and establishment loans, but growers did not keep seed and replant.

Coffee

This scheme rapidly attracted community interest in early meetings. The administration planted 'experimental' plots, and Bollard (1977,II:27) mentioned up to 177 private growers. However, Admiraal (1978), who made a comprehensive review of Atiu coffee, considered that Bollard could have mixed numbers of growers and plots in obtaining the figure of 177 growers. From 1969, 52 growers were involved. The numbers producing in any one year are shown in brackets (Admiraal, 1978:4).

Coffee has a requirement for intensive labour to pick the berries in April/May. In cases other than small family plots, this demand has apparently been easily filled by groups of women, who are eager to pick up the extra cash income.

The government is currently 'reviving' the coffee industry. Thirty-five growers were present at a meeting that I attended in September, 1978. Discussion centred on price stabilisation, crop economics and methods of making payments to growers. A revival of the industry will make use of the coffee-processing plant that was built in 1967. Interest and improvements continued in 1979 with a new payout system, field days and other advisory work.

Taro

Previous 'resistance' to selling traditional root crops waned rapidly in 1970, when Rarotongan taro was hit by a blight and the price rose sharply. With administrative encouragement, the Atiu growers produced for the Rarotongan market until the blight reached Atiu two years later. There has been a recent revival of interest in growing taro for sale on Rarotonga, and for export.

Vegetables

Growers were encouraged to produce vegetables for the New Zealand army engineers who were building the new harbour in 1974. Some vegetables were sold on the local market. Drought, technical problems and returns to labour discouraged growers (Bollard, 1977, II:35). In

1978-79, a few growers were producing for the local market, and new interest was expressed in airfreighting produce to the Rarotongan market. One grower airfreighted capsicum to the New Zealand market in 1979.

Pineapples

The early interest of individual pineapple growers was reduced by the decision to develop the Enuamanu Incorporation. Eventually one grower, who had large areas of non-incorporated land, grew pineapples privately. However, in 1978 land became available to private growers through sub-leasing, and there has been an immediate, positive response (see chapter seven).

Minimum Grower Response and Constraints of Land and Labour

The column minimum nos. of growers in Table 6.4.1 provides an indication of growers' demand for cash projects other than citrus. There has been an obvious labour constraint to the projects. In particular, growers did not involve themselves simultaneously in two projects with similar seasonal demands for intensive labour (e.g. peanuts and tomatoes). Neither does there appear to have been conflict over land resources between succeeding projects (see Table 6.4.2).

TABLE 6.4.2

Atiu Projects : Constraints of Land and Labour

Projects in Chronological Sequence	Principal Land Use			Intensive Labour Requirements			
	Swamp	Fertile Soils	Fern Lands	Dec.- Feb.	Mar.- May	Jun.- Aug.	Sept.- Nov.
Citrus		X				X	0
Forestry		0	X	?			?
Tomatoes		X				X	0
Peanuts		0	X			0	X
Coffee		X			X		
Taro	X			0	0	0	0
Vegetables		X				X	X
Pineapples			X	X	0		0

X Major constraint

0 Minor constraint

Source: Field notes

Conclusions

Bollard (1977:84) concluded:

> Records of Atiu projects show that when an innovation is introduced by government, the whole island is quickly aware of it; there is no time lag in the dissemination of innovations. A few innovators may try a crop,and depending on their success, some of the opinion leaders may be induced to adopt it. The time span for all growers to make their decisions is very short, compared with some similar documented innovations elsewhere.

The following inferences can be drawn from this series of agricultural projects on Atiu.

a) There has been a constant demand for cash-earning opportunities.

b) The administrative response to the demand for cash agriculture has been a series of projects. The projects failed for a variety of reasons, including lack of markets, inadequate prices, disease and transport problems. The need for long-term planning and provision of rural infra-structure was ignored. Apart from citrus none of the proejcts have involved the growers in capital expenditure or long-term credit. Therefore, it has been relatively easy for the growers to withdraw: their only immediate major loss has been labour inputs.

c) Despite its apparent availability, labour was a constraint. Labour can be attracted from a project to a more remunerative occupation. Where growers switched to new projects, there was minimal competition for land and labour.

d) Four projects were receiving administrative attention on Atiu in 1979. Pineapples, vegetables, coffee and citrus were all likely to receive significant support from the growers. It is not yet clear to what extent this will be a long-term feature and whether or not further projects will be introduced.

The overall decline in participation in agricultural projects reflects the move from agriculture to other employment both on and off the Island. It is possible that growers became more sceptical in making production decisions, especially as many necessary improvements in rural infrastructure did not occur. By 1979, interest in agricultural projects on Atiu centred around a 'hard core' of keen growers of vegetables and pineapples. Some wider interest was apparent in the revival of coffee and the new interest in taro exports to Rarotonga and overseas markets. Future developments will depend on the keen growers who have accepted many new practices and attitudes. Of particular importance, are new attitudes to social pressure against 'getting ahead' on the island. Other people will be involved intermittently in cropping according to their perception of short-term benefits. This opportunistic attitude is examined further in the next section. Also, the failure of the Atiu projects to fit the social context of the island is discussed further in chapter seven with regard to misconceptions inherent in the planning of the pineapple scheme on incorporated lands.

6.5 Case Study: Banana Revitalisation on Aitutaki Island

Revitalisation of the banana industries in Polynesia has been a recent regional concern (Walker, 1976; SPEC, 1977a, 1977b). The banana industry in the Cook Islands, particularly on Aitutaki (where nearly 50 per cent of the households now grow this crop commercially), has been of particular concern to the governments of New Zealand and the Cook Islands. The industry on Aitutaki is currently receiving technical assistance, development loans, assistance with fungicide spraying, and price support. A major contribution of machinery ($76,000 over three years) was proposed for New Zealand aid (Cook Islands Development Project No. 321), and is now being funded by an Australian aid programme. New Zealand is funding new packing, handling and lightering equipment.

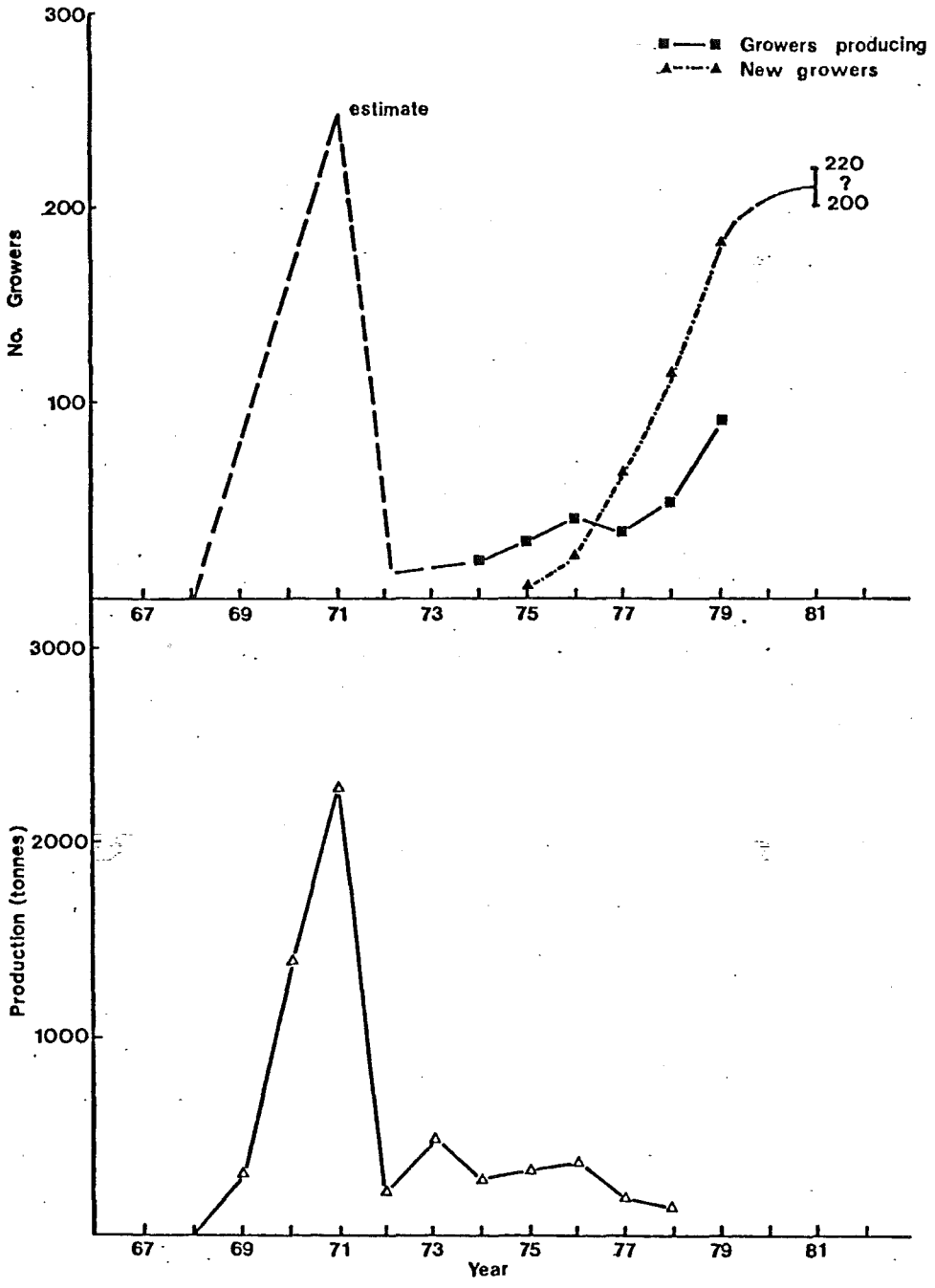
Bananas have previously been an important food crop on Aitutaki (Johnston, 1967). Commercial banana-growing was introduced on a large scale in the late 1960's. Over four hundred growers were registered in the initial bout of enthusiasm, but interest declined

rapidly after a short period of production (see Figure Five). The major technical problems that appear to have caused the 1972 decline in production are summarised below, along with the present administrative responses to each problem area.

a)	Extensive wind damage	-	Compensation payments and proposed insurance scheme.
b)	Shipping losses	-	Despite efforts to improve the services, losses have continued with significant losses in '78, '79, '80. There has been some discussion of processing by drying, and manufacturing puree.
c)	High labour demand for weed control	-	Introduction and widespread use of herbicides.
d)	Black leaf streak (Sigatoka disease)	-	Ministry of Agriculture organises and subsidises a spray programme.
e)	Inadequate Returns	-	Price Support Scheme
f)	Extension and Research	-	Two very active officers are employed with back up from a Commonwealth Fund for technical cooperation expert and NZDSIR.
g)	Handling and Packing	-	The Marketing Board is introducing new techniques and procedures. Tractors, trailers and equipment are being supplied under aid programmes.
h)	Credit		Economic Development Fund loans.
i)	Lack of grower 'involvement'	-	New proposals to support the Aitutaki Growers' Association and 'hand over' responsibilities for administering payouts, handling and packing, spraying etc.

FIGURE FIVE

Response of Banana Growers on Aitutaki



Source: CI Ministry of Agriculture Files and Statistics, Walker (1978).

In 1978 the Ministry of Agriculture made the following projections for the expansion of planting:

To March 1979	155 acres
To March 1980	200 acres
To March 1981	240 acres

In fact, by October, 1979 there were already 182 growers with holdings totalling 255 acres. The area planted could be expected to expand further as even more new growers begin to plant, and holding sizes increase from a low average of 1.4 acres per grower. Experience had shown that many new growers were likely to expand their holdings if the crop was a success. In view of the response of growers in 1970-71, a total of 400-500 acres was not an unrealistic figure for future total plantings. The lower prediction, apart from illustrating that grower-response is difficult to assess, shows that 'change agents' are likely to provide a conservative estimate of grower response to a scheme. Protection against over-spending, and expected resistance to new ideas, result in conservatism, despite successful advisory work being an important part of the new expansion.

Meanwhile, as the response to 'revitalisation' exceeded official expectations, there was an increasing gap between supply and demand for infrastructural requirements. Problems perceived by growers are basically infrastructural. The banana extension scheme was consequently heading rapidly towards a situation where perceived problems would overcome the motivation to plant and a new collapse would become imminent. Growers' attitudes towards banana-cultivation were therefore of vital concern to maintaining the impetus of the new upturn in production. The following discussion of the perception of problems facing banana growers on Aitutaki is based on data that were derived from two APU surveys by the Agricultural Planning Unit (APU, 1978e and 1979a). The APU kindly made their original raw data available for further analysis. I followed up these surveys with my own detailed interviews each year.

In 1978 the main problems identified in the APU survey were lack of compensation for wind damage, low prices, inadequate shipping, labour and problems associated with herbicide spraying (Table 6.5.1).

TABLE 6.5.1

Ranking of Major Problems - As Described to Growers

Problem	Rank in 1978	% Growers Perceiving 1978	% Growers Perceiving 1979	Rank in 1979
No compensation for plant and fruit losses	1	73	27	(4)
Low Prices	2	55	75	(1)
Inadequate shipping	3	49	20	(5)
Poor weed control due to unavailability of spray equipment and shortage of parts	4	45	19	(6)
Inadequate water supply for mixing herbicides	5	36	65	(2)
Unavailability of tractor and implements for land preparation	6	29	15	(7)
Insufficient, or lack of, credit facilities to enable purchase of tractor and implements	7	21	58	(3)

Source: APU (1978e, 1979a)

NOTE: Labour Shortages

The problem "shortage of labour to carry out harvesting operations within a 24-hour period" was identified by 14% of the growers in 1978. However, 13 growers identified time/labour shortages under "other problems". Only one of these growers identified the problem of labour for harvest. Therefore, 35% of the growers faced some sort of labour shortage, and this was not a clearly-asked question.

Land preparation was of little concern to growers with new plantings. Concern was expressed, however, over the unavailability of a bulldozer to prepare new sites for those both beginning and extending plantings. As the acreage in bananas increased, more areas of uncleared bush required bulldozing. Equipment, water and labour for weed control were identified as important problems. The improved returns to labour through the widespread use of herbicides has been an important factor in the present resurgence of banana planting, and weed control remains a major concern of growers.

There appeared to be general satisfaction with the returns from banana cultivation and provision of credit facilities. APU (1978b) figures showed that the average return to labour should have been around $1.80/hour. Intending growers also expressed satisfaction with the availability of loans from the Economic Development Fund. Without this credit, most growers would not have been able to finance the initial development of their plantings.

Further analysis of the APU (1978e) data showed important variations in perception of problems between growers depending on the age and size of their plantations. A summary of the influence of the age of a grower's oldest plantation on his perception of problems is presented in Table 6.5.2. As the Table shows, perception of the

TABLE 6.5.2

Influence of Plantation Age on Perception of Problems in 1978

Problems	Oldest Plantation Less Than One Year Old	Oldest Plantation More Than One Year Old
	% Growers Perceiving	% Growers Perceiving
1 Wind	54	89
2 Price	38	75
3 Shipping	26	78
(4 (5 Spraying (herbicide)	33	49
6 Land Preparation	10	50

Source: APU, 1978 (raw data)

problems of wind, price, shipping and land preparation (problems 1, 2, 3 and 6) was significantly lower for growers whose oldest plantations were less than one year old. The difference in age of plantations was not significant for the problems of herbicide spraying (problems 4 and 5). Spraying was of concern on all plantations. However, a similar analysis shows that growers with holdings greater than 1.5 acres were more concerned with spray problems than those growers with smaller holdings.

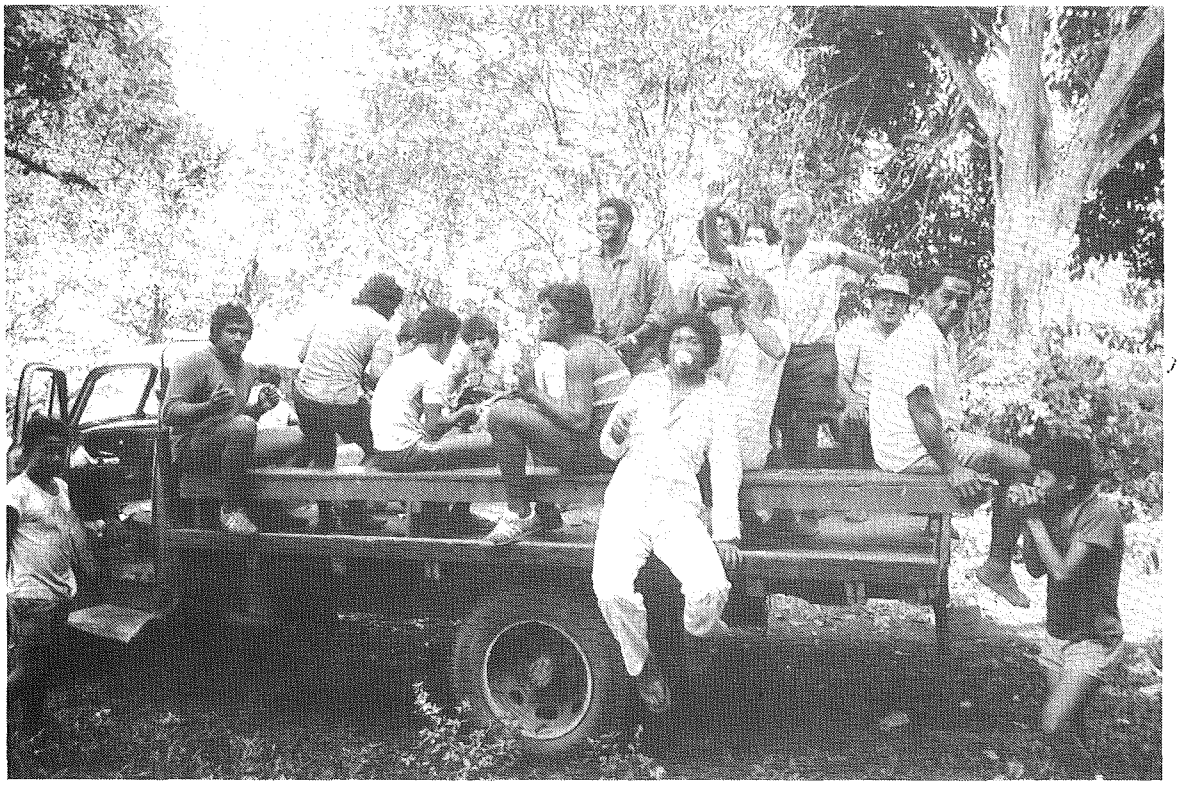
In the survey (APU, 1978e) the large proportion (52%) of growers with plantations more than one year old could have led to an under-rating of the perception of problems faced by the growers (banana plantations first produce in 9-10 months and are usually cropped for 5-6 years.) The act of planting is optimistic. Growers who have just adopted a crop - even if it is for the second time - do not perceive as many problems as those growers with older plantations.

Any administrative under-estimation of the problems perceived by growers was likely to contribute to the eventual collapse of the scheme through an excessive buildup of problems faced by the growers.

By late 1979, however, the overall perception of problems had changed (Table 6.5.1). Compensation payments for wind damage and improvements in shipping services had reduced these two problems. But the APU (1979a) survey showed that prices/returns and credit facilities for purchasing equipment had become important concerns. My interviews found that growers were very worried that returns might prove inadequate, although they were pleased with the speed of payment - often made a day after shipping.

The problem of crop returns was accentuated by the withdrawal of input subsidies on fertilisers and herbicides - subsidies had applied to citrus, pineapples and bananas. Growers did not fully understand that the subsidies had been transferred to returns in the form of price support (see section 4.4). The transfer of subsidies from inputs to outputs was a Ministry policy designed to encourage better growers and avoid wasted input subsidies. The programme for subsidy transfer was interrupted in early 1978, when the Government at that time decided to maintain double subsidies. The later withdrawal of input subsidies therefore reduced profit margins, although additional price support was granted to compensate. Furthermore, the transfer of subsidies to price support required a more sophisticated approach to farm management by the growers. No attempt was made to back the subsidy policy with advice and the whole changeover was inadequately explained. These problems applied to the other subsidised crops as well, but had extra significance for the expansion of banana planting.

Village group harvesting bananas, Aitutaki, 1979.



Growers' Association Tutaka, Aitutaki, 1979.

Several growers indicated that they would abandon their crop if returns (to labour) proved to be inadequate, or too many problems occurred in shipping, handling, supply and other infrastructural areas. It is therefore possible that the present surge of enthusiasm for bananas could easily turn into another sudden fall in production.

6.6 A Conclusion on Grower Motivation

In the 1950's and 1960's, citrus and tomato production provided the basic agricultural income in the Southern Group. Attitudes to these crops are important. Stone (1967:311-2) has examined production of citrus. Fluctuating yields, the delay in bearing from young trees, and the need for high inputs for relatively small returns led most growers to minimise their inputs of orchard maintenance.

> The element of long-term planning upon which the scheme was based was a new concept to most growers who, moreover were deprived of any real sense of involvement as a result of most of the maintenance of the plots being carried out by the Agriculture Department. While the Department built up experience and skill among its staff, many plot-owners learned little from the scheme.
>
> (ibid.)

Bollard (1977) has further described this attitude of low input for low output taken by citrus growers.

Tomato growers followed a similar low-input and casual approach (Tiller, 1958:8-12). A family would plant large numbers of closely-spaced tomato plants, which grew poorly - with average yields of around 0.25 kg. per plant. The transplants were usually large, and planted deeply to avoid moisture problems. As a consequence, they suffered severe checks to growth. Management inputs after transplanting were often very low, and viral/fungal diseases proliferated in the absence of spraying. Fertilisers were kept to a minimum and crop rotations were not practised. As with citrus, shipping difficulties ensured that tomato growing remained a low-input, high-risk opportunity to gain a little cash income.

A casual, sometimes opportunistic, attitude to cash crops prevailed as growers attempted to minimise the risks of their investments by minimising inputs, especially financial investment.

Projects have not followed the diffusion model! Projects were often adopted very rapidly. There were also some rapid declines in the interest of growers after initial adoption, as shown by the case studies of agricultural projects described in this chapter.

To understand why such collapses have occurred in past projects, and are likely to occur again, it is important to look at the motivation of growers towards planting. The APU survey (1978e) showed that 75 per cent of the banana growers on Aitutaki were part-time farmers. There is a strong emphasis among the growers on extra cash-earning through agriculture By December 1979, 68 per cent of the growers were part-timers, despite the large number of new growers. There were then 58 full-time growers (APU, 1979a). My field studies indicated that many of these new full-time growers were younger men who stay in, or in some cases return to, their villages to plant. Older men, Ministry officers and the village growers' association were all encouraging this trend, supporting the new growers in obtaining land and making a start with planting.

It became apparent during interviews in 1978 that most of the part-time growers on Aitutaki were cultivating bananas, not simply for extra income, but for specific purchases. One grower contended that he (and everyone else for that matter) never went short of money for daily living. He earned $30 per week. He, like many others, used his agricultural income mainly for capital purchases, especially house-building. His income from bananas for that current season was earmarked for roofing iron. Another grower had built his house over five seasons through agricultural income and was awaiting that season's banana crop to make the finishing touches. One grower was planning to buy, not one, but two motorbikes.

An opportunistic attitude towards an agricultural project makes the project much more difficult to sustain in the longer term. Large fluctuations in the production of bananas may affect the national or island economies, or provision of shipping services, but do not necessarily cause hardship among people with multiple incomes.

Family incomes can include a combination of regular employment, casual income, welfare payments, remittances, food crops and often more than one cash crop. Mixed incomes have been a feature of the mixed subsistence-cash-cropping economy that has prevailed. Stone (1967:356) discussed multiple family incomes, and Johnston (1967:60) described multiple incomes on Aitutaki. Bollard (1979:51) has provided details of diverse total incomes on Atiu between 1961 and 1974.

Demand for income beyond subsistence needs is changing, and not necessarily at a constant rate. Money does not always have a constant utility, and therefore incentive to earn extra cash income from agriculture has not been constant. Brookfield (1972),discussing Fisk, suggested that the utility of money can drop when the supply of money exceeds the "few known wants that money can satisfy". Demand for consumer goods, and therefore money, can increase in "jumps" especially through the provision of new trading systems, such as trade stores (1972:12). In the Cook Islands, longer-term changes affecting demand for income have included the establishment of trading companies, opening of cooperative stores, rise in small stores and entrepreneurship and the building of airstrips and operation of inter-island air services. In the shorter-term, the availability of shipping can considerably affect the range and amounts of goods available, especially on the more isolated islands. Erratic cash cropping might follow erratic changes in demand for purchased goods. Steadier changes in consumer demand, as the cash economy has expanded, appear to have been met by a move to more stable incomes obtained either in the service sector or through emigration. Bollard (1979:90) confirmed this argument by describing the tendency towards "lumpy" household expenditure:

> ...growers who wish to buy motor-cycles and sewing machines work very hard for a short burst to pay for them, then return to earlier leisure levels.

Papaa concepts of work, leisure, etc., can have a very different interpretation in a small community where satisfaction (utility) has a 'new' cultural meaning.

Bollard (n.d.,1977, 1979) has tackled the complex question of how growers react to new agricultural systems which have very different cultural/technological requirements when compared to their existing rural

system - a mix of subsistence crops and low-input cash crops. Growers usually start with very little knowledge about the technical, labour, marketing and other requirements of introduced systems. At the same time, Bollard (1979:171) has discussed how the administration, an important source of information about new crops, has presented distorted information about expected yields and project performance.

To assess the most satisfactory input of labour for a new project, growers must depend on information provided, past experience or efforts demonstrated by other growers. With long-term crops such as trees, learning can be very complex (ibid.:170). Production in any one year depends on inputs made over several previous years and, with citrus, there is an initial 'unknown' investment period of around five years. Short-term crops offer less learning problems, although considerable risks of labour, and sometimes capital, can be involved.

In assessing the utility of labour inputs for new crops, growers can make only "tentative decisions" and then experiment (ibid.:176). On Atiu, growers were obviously attracted to the new crops by the prospect of extra cash income, but they soon found that the extra work involved "cut into subsistence and social activities. After a few seasons many decided that the extra money was not worth the extra work, and gave up the projects" (ibid.). Bollard (n.d.) suggests that growers had often over-estimated their desire for money and therefore invested unrealistic amounts of labour in an initial burst of enthusiasm. Similarly, Allen (1976:310) found Papua New Guinea people had made a realistic evaluation of innovations only after adopting them. They thus had to learn about their "inflated expectations" regarding innovations.

The evidence for inaccurate knowledge about labour utility does not necessarily provide an adequate explanation as to why growers switched from one crop to another, however, just as the argument as to varying utility of money does not explain adequately the move to non-agricultural employment. Attitudes to risk are important. Growers on Mitiaro displayed a resistance to taking risks with food crops. Bollard (1979:93) maintained that with project crops the administration provided considerable insurance against risks. It is clear that while a grower has no large capital investments in plant and stock (because he has aid, government subsidies and cheap loans), he can maintain a

casual attitude towards short and medium-term crops. Therefore, despite the knowledge of previous losses in bananas, growers were quite prepared to take the positive step of replanting. But they could just as easily take the negative step as well. For younger men with no particular 'ties', this step frequently involved emigrating to other employment opportunities in Rarotonga or New Zealand. As the Atiu projects have demonstrated, a negative response to one crop is also more probable when there is an alternative short to medium-term crop available, especially when the alternative crop has different requirements for land and labour.

New schemes on any island must be carefully considered in view of the possible competition for land and labour resources already committed to another project. All projects need to be fully evaluated with regard to grower response and the continued maintenance of their motivation. While many agricultural projects make a rapid and enthusiastic beginning, too many lose headway and fail within a very few years. It is probably an over-simplification to lay all the responsibility for these failures on an administrative inability to provide suitable rural infrastructure in the form of subsidies, transport, machinery or even information and education, although there certainly appears to have been some deficient planning in these respects.

The short-term enthusiasm of growers and rapid build-up in perception of problems suggest a basic cultural reason for the failure of so many projects. I believe the most important reason for erratic development may lie in a failure to relate project planning to the social behaviour and needs of the people most directly involved. Ultimately, this failure may be more important than any financial inducements or logistical planning. There are many conflicts between Maori and Papaa perceptions in planning, a topic examined in more detail in the next chapter (seven).

CHAPTER SEVEN

AGRICULTURAL PROJECTS AND PLANNING: MAORI AND PAPAA PERCEPTIONS

Since the 1940's, a series of ill-prepared and faltering agricultural projects have been the administrative response to an urgent requirement for rural development in the Cook Islands. Of the many export crops promoted, citrus, copra, bananas and pineapples have often been called the 'traditional' export crops, because of their importance in earning export income despite marked fluctuations in their production. In this chapter, I will first examine in sections 7.1 and 7.2, the main issues that have accompanied production of the two processing crops: citrus and pineapples. I will then discuss in detail the problems faced in attempts to achieve economies of scale in administration, land ownership and farm management through the Enuamanu Land Incorporation on Atiu. Pineapple development on Atiu has illustrated, often dramatically, the many serious implications of transposing incomplete parts of one agricultural system onto another rural system (7.3-7.5).

7.1 Citrus

Cook Islanders have shown a general lack of interest in maintaining long-term inputs for agricultural projects that have a delayed return (Bollard, 1977 and 1979). Problems encountered with citrus production have illustrated this fact. In contrast, there has been much more enthusiasm for new shorter-term crops, particularly vegetables.

Short, medium and long-term crops are often discussed as if their use is interchangeable, but it is important to note that each crop has different demands for land, labour, machinery and marketing, covers a different production time and involves different risks. For example, it cannot be assumed that vegetables compete for the same land and labour resources as citrus; in fact, many growers plant vegetables among their citrus trees. It is therefore very important to examine the different requirements of each crop, including social requirements

A money system came to the Cook Islands with the early Europeans but significant changes to agricultural production did not occur until the 1950's. Before then cash income was based mainly on the sale of copra and wild oranges. Hurricanes, drought, availability of shipping, and price all affected the gathering of these crops. Today copra is still produced as a semi-commercial, low-input, low-output crop, and its production fluctuates considerably. The northern atolls, where copra is a primary source of income, produce 85 per cent of the total copra exports. The main problems in increasing and improving copra production are the long-term nature of investment in new trees - which take up to ten years to produce - and price. Also, the desire to produce copra from existing trees will be affected by the availability of other sources of cash, and opportunities to use the income.

Orange trees were introduced a century ago, and they spread quickly, growing wild on several of the Southern Islands. Because the trees required low inputs of labour and few agricultural techniques, they fitted easily into the casual nature of early Cook Island cash-earning patterns. Maintenance was mostly limited to clearing the under-growth to facilitate picking. When a ship called, the household would turn out to pick any available oranges. As shipping was irregular, orange production was very opportunistic, and the grower was not required to develop any long-term approach to production. The amount picked (produced) was related to price (Bollard, 1977:55).

Despite rising prices,degeneration of 'wild' orange trees and the appearance of new pests and diseases brought a decline in orange production in the late 1940's. Reduced income from oranges and increased desire for cash resulted in social and political unrest, and to combat these effects, the New Zealand administration introduced the Citrus Replanting Scheme (CRS) (Wilson, 1969). The history of the scheme on Atiu has been extensively researched by Menzies (1970) and Bollard (1977).

I will summarise some important points about the scheme.

a) New varieties of commercial citrus trees required a completely new orchard technology which was not accepted. Fletcher (1972, 1976) for example, has described how he made numerous technical suggestions in the late 1950's, which were not followed up.

b) Failure to appreciate technical requirements in the planning stages led to an increasing need for participation by the Department of Agriculture in daily orchard work, and for increased government subsidy of growing costs.

c) Net returns to the growers came very slowly (from 8 to 12 years) and actual net returns were almost always below those planned (Bollard, 1977: Table 8).

d) Greggs Ltd of Dunedin continued to insist that their processing factory on Rarotonga was only marginally profitable. Low prices were paid to growers.

e) Compared with traditional production methods, production methods necessary for the success of the scheme called for high inputs of labour and capital. Growers became discouraged by poor financial returns, enthusiasm waned and they reverted to their short-term attitudes to production.

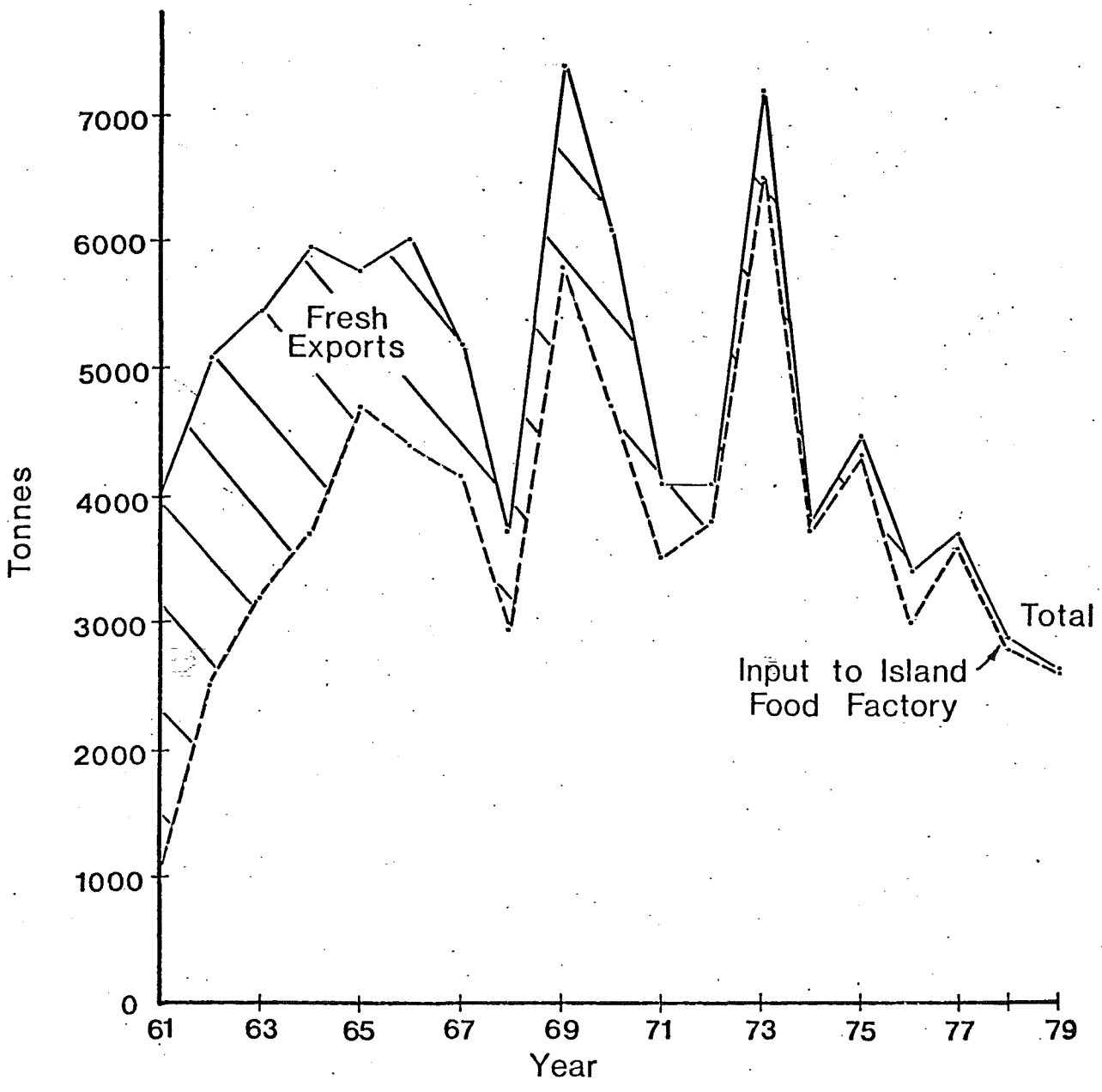
f) As a result of their failure to gain cash income, growers either changed to new crops (such as pineapples, vegetables and bananas), migrated or sought other employment.

The decline in citrus production reinforces Bollard's opinion (1977:63) that as a programme of agricultural development the CRS has been a failure. Many people,however, believe that citrus has considerable potential in the Cook Islands and that the industry should be revived. If this revival is to occur, past mistakes have to be carefully examined and new approaches found. In the last two years several studies have been completed and other efforts made towards reviving the citrus industry (APU, 1978a). Replanting is the main requirement, as more than half of the orchards are too old for profitable production.

There have been two important recent developments. The first was the purchase by the Cook Islands Government, in late 1978,of the processing factory formerly owned and operated by Greggs Ltd. The second was the plan for transferring the Ministry of Agriculture's servicing roles to growers' associations (see 4.4 and 4.5). The latter move was particularly important, as in order to provide at least minimum inputs to the factory, the state has continued to carry out most of the servicing of citrus plots on behalf of the growers.

FIGURE SIX

Citrus Production



Source: CI Ministry of Agriculture Statistics

The official target for citrus production has been 16,000 tonnes (500,000 cases) per year but annual production has commonly been less than 4,000 tonnes (see Figure Six). Expansion of production necessary to reach the target would require much better management of existing orchards, replacement of old trees, and new plantings of around 100 acres (15,000 trees) each year for ten years. In contrast, by 1978 an average of less than ten acres per year had been planted during the previous ten years. A planting programme to meet the 100 acres per year target was formulated but was never likely to be achieved, and planting is only the first step in a long production cycle. Despite new incentives to remove old orchards, and attempts to improve citrus nurseries, plantings remained inadequate in 1979.

In the meantime, there has been considerable potential for better management of existing orchards, which could at least raise production to the 1973 figure of 6,500 tonnes. The APU (1977a) Citrus Survey showed that more than 60 per cent of the existing plots could be improved by better management - pruning, weed control, spraying and control of livestock. Oranges were frequently unpicked and left to rot on the ground because of inadequate prices, and labour problems.

Emigration has often been used by outsiders as one general explanation for the recent decline in agricultural productivity. Cook Islanders themselves pointed out citrus plots that had absentee owners and commented that the plots were poorly run. However, the Citrus Survey (APU, 1977a) showed that only nine per cent of the citrus orchards on Rarotonga and around 20 per cent on Atiu, Mauke and Aitutaki were controlled by absentee owners. The survey showed no correlation between ownership and condition of the trees. There were in fact many plots that were poorly run and capable of greater production.

Efforts have been made to improve citrus management, with the aim of making 'good growers' better and forcing the 'bad grower' to either improve or lease his land because of increased losses. Subsidies for fertilizers, spraying and machinery operations have been withdrawn and replaced by the Price Support Scheme. Further support was made available to growers in the form of SSA loans to cover seasonal servicing charges (see section 4.4).

There has been insufficient publicity or extension work to help growers to understand these changes. Considerable confusion about the scheme exists, even among 'good growers' and administrators. Furthermore, although 'good' growers should benefit, it may prove very difficult to persuade indifferent growers to do better. Also, as costs of inputs escalate, price subsidies could reach ridiculous proportions.

Technical support has included provision of fertiliser, spray and root-stock trials. Skeletonisation - heavy pruning to induce new growth - was tried in several orchards. Research and extension services have been reorganised and revitalised in the new Ministry of Agriculture. Transfer of the Ministry's servicing roles to the growers' organisations has been discussed in chapter four. Cooperation to achieve economies of scale in associations remains important, as does cooperation in the merging of fragmented plots to form larger units which would be more profitable. Recent feasibility studies (APU, 1980a, 1980c) indicated, however, that the economics of large new citrus estates proposed for Rarotonga and Mangaia are not satisfactory. To ensure profitability, the 28 acre orchard on Rarotonga will require special servicing arrangements. The proposed Mangaian orchards require several measures including direct subsidies, aid assistance and better economic conditions - such as a 50 per cent reduction in current inflation. Many of the social problems of farming large estates are discussed in sections 7.3 and 7.4.

It is clear that the factors influencing citrus production have been very complex. In addition to processing and marketing requirements many social, economic and technical factors were neglected. It has not been fully recognised that citrus production has entered a new phase. Therefore clear definition of objectives for the industry, and a properly co-ordinated approach to planning, have not existed.

7.2 Pineapples for Processing

Pineapple development schemes on Mangaia, Rarotonga and Atiu have illustrated many problems of inadequate agricultural planning. Pineapples were introduced to the islands by missionaries, and the cultivation of them, along with other commercial crops, was encouraged by

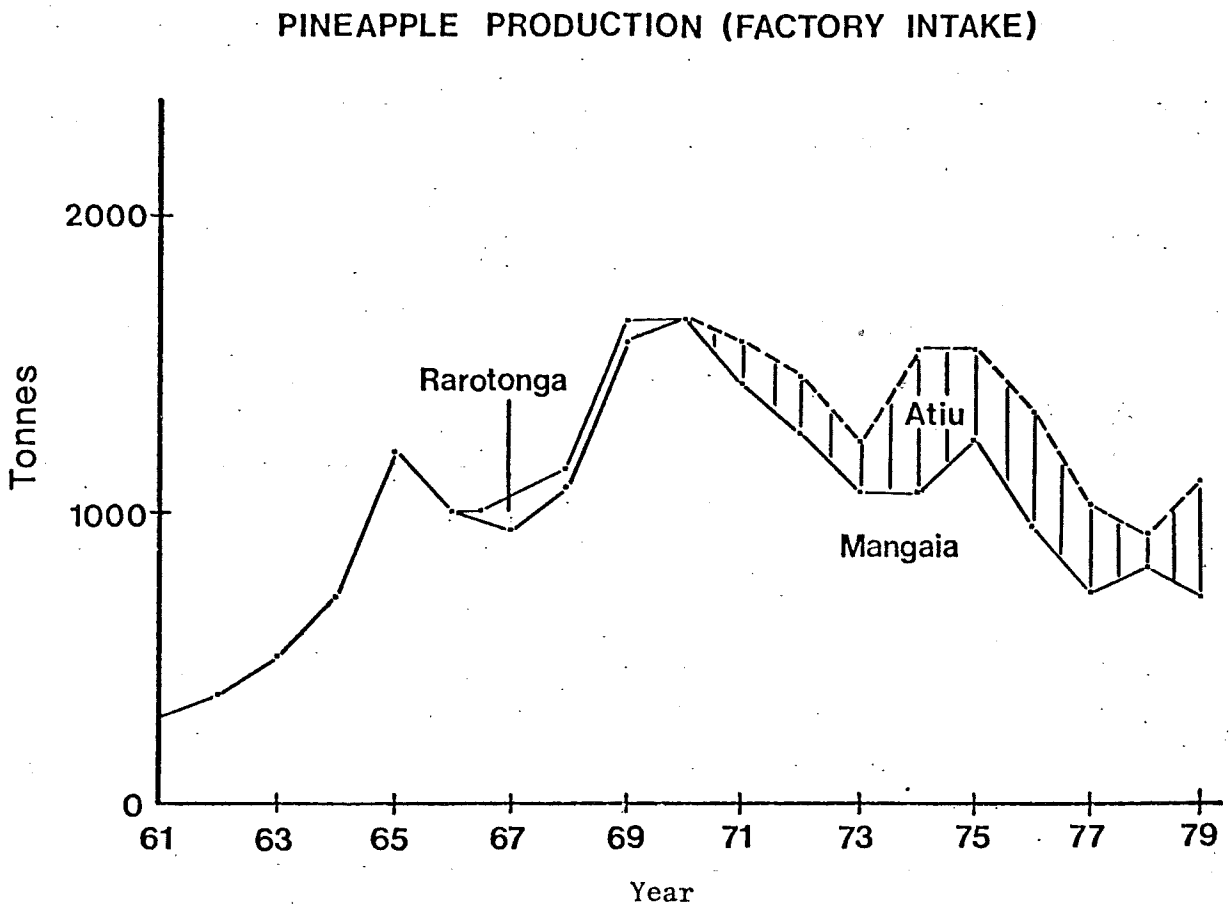
the early Europeans. Sporadic exports of the fresh fruit have been made throughout this century. However, cultivation of pineapples did not expand beyond the traditional rotational and fallow system until the 1950's. Then, new export production originated mainly on Mangaia when plots were established on the fern lands. But these fern-land soils are heavily leached, and soil fertility fell rapidly as a result of cultivation. This, combined with new diseases and poor handling, brought a fall in quality and yield, and fresh-fruit sales to New Zealand had crashed by 1956. The basic needs of technical ability, adequate handling and successful marketing had not been filled. Inadequate shipping ensured that growers maintained a casual approach, as with citrus and other export crops (see Allen, 1969).

Despite this setback, Mangaians were again producing pineapples by 1960, with the help of an extension programme based at a local primary school. New emphasis on good planting material and fertilisers allowed improved production on the fernlands, and the new canning factory on Rarotonga opened in 1961, providing a much more accessible market. The original aim of the processing factory was to process citrus produced from the CRS, but full utilisation of the factory required a summer crop. Pineapples seemed ideal.

Cultivation for the factory remained concentrated on Mangaia, where pineapples were grown already. But the existing methods were far from being of an 'industrial' or plantation-mode. Pineapples were grown for supplementary income and taro remained the staple food crop. Production involved low inputs on small areas of land. Problems such as shipping, poor handling, diseases and lack of technical skill continued to limit the interest of growers, and a few more commercially minded growers produced most of the total yield (Allen 1969:93). Production reached a peak around 1970 (see Figure Seven).

Despite the introduction of new canning varieties and cultivation techniques, the high incidence of diseases, decreased soil fertility and a lack of suitable management practices had caused low production and very uneconomic returns by the early 1970's. Efforts were made to begin production on Rarotonga, with 30 acres cultivated in 1965/66, and a minimum development of 166 acres planned, but this effort also failed. The answer to the many problems outlined above seemed, at that

FIGURE SEVEN



Source: CI Ministry of Agriculture Statistics.

stage, to lie in the introduction of plantation mode production and in 1969 the focus of pineapple development shifted to Atiu. The intention was to utilise land incorporated to achieve economies of scale and allow the use of industrial techniques. But, as I will explain in section 7.3, yields on Atiu have been very low, despite large, costly inputs.

In the late 1970's, production was revived on both Mangaia and Atiu. Uner the Mangaia Growers' Association, pineapple planting expanded rapidly and predictions of very large yields were made by the Association (e.g. 5,500 tonnes for the 1978/79 season compared to an actual yield of nearly 1,000 tonnes!). The Mangaian Association

lobbied for support in the form of short-term credit, machinery, expertise, harbour development, improved shipping and better prices. Considerable aid was given by the Cook Island and New Zealand governments, and through the UNDP. There was also talk of operating a cannery on Mangaia. A consultant investigated the project but the economic feasibility was most uncertain.

In 1977, the Atiu development also had a new lease of life. This was based on the arrival on the island of a new manager and of an agronomist(both of whom were sponsored by volunteer schemes), and aid-funded machinery. Also, consideration was given to leasing plots of incorporated land back to individual growers, with the Incorporation providing servicing and administration. Despite this policy, as well as the new inputs of machinery, management and agronomic information, expansion was limited by the need for suitable planting material to be repropagated. Overall, the revived Atiu project involved the Enuamanu Land Incorporation, individual growers, the Cook Islands Government and three different aid programmes: from New Zealand, Australia and the UNDP. While some increases in production have been achieved, many problems have been encountered, as described in the rest of this chapter.

By 1980, continued pineapple production for canning in the Cook Islands appeared to be a very doubtful enterprise. There were several important facets which should have been considered before pineapple growing became an important part of Cook Island agriculture and economic development. Cultural and environmental considerations that needed to be taken into account include the following (see also section 8.2):

a) The practices required for growing pineapples are entirely different from those associated with traditional, subsistence agriculture. The existing rural system was not suited to the 'industrial' crop.
b) Community life was widely affected by the new methods used to organise large-scale pineapple growing. These changes appeared to disrupt traditional methods of social organisation, labour and cultural identity in the small-scale communities involved.

c) Despite previous success with contour planting and erosion control (Canter Visscher, 1963:31), there has been little consideration of the extensive problems of erosion on the foothill land used for pineapples, and of the consequent flooding and siltation of taro swamps which are vital to the local diet and culture.

d) Pineapple production has been heavily dependent on a number of imported inputs, and escalating costs of transport, fertilisers, sprays and machinery made it difficult to keep the crop economic and therefore maintain incentives to growers. Failure to provide a reasonable income for people who have become increasingly dependent on cash will cause acute social and economic problems on both Aitu and Mangaia.

Pineapple development resulted from an external (Papaa) interpretation of island resources and their potential uses. The limitations of the existing rural systems on Mangaia and Atiu were not understood by planners. Examples of inadequacies that later became apparent ranged from poor harbours and soil resources to an unsuitable social system. Attempts to base economic and social development on processed export crops have led to considerable economic vulnerability and dependency on these peripheral (outer) islands, and have added to increasing environmental instability and social disorganisation. The worst examples of 'external' planning can be found in the attempt to impose a new form of economic organisation on Atiu.

7.3 Case Study of Land Incorporation on Atiu

'Scale' proved a central management problem in early pineapple development. As Scott (1971:B1), then Director of Agriculture, reported, prospects for a rapid expansion in acreage and output were not good while Mangaian growers kept to a system of small individual family plots. Therefore, in 1969, the Cook Islands Government began to promote a new development on 600 acres of Atiu fernland. This development embodied a new concept of amalgamated ownership and management under the auspices of a land incorporation. Incorporation

appeared the best prospect for plantation-mode production to improve management practices and gain economies of scale. But by the time of my first field work in late 1977 the development was clearly a failure. The original plan was to cultivate 520 acres within 4½ years, but only 40 acres remained under cultivation in 1977. Accumulated revenue was originally estimated to reach $1.3 million by the end of 1977, when it was in fact only $64,500, while total direct costs probably exceeded half a million dollars (see Table 7.3.1).

TABLE 7.3.1

Performance of Pineapple Development
Atiu, 1970-1977[1]

	ACTUAL PERFORMANCE			ESTIMATED PERFORMANCE		
	Costs	Revenue	Loss	Costs	Revenue	Profit
1970	10,500	Nil	10,500	20,000	Nil	-20,000
1971	54,100	Nil	54,100	22,000	Nil	-22,000
1972	28,000	6,900	21,100	21,300	Nil	-21,300
1973	29,700	7,000	22,700	45,600	153,200	107,600
1974	39,100	16,300[2]	22,800	65,400	245,100	173,700
1975	41,500	13,500	28,000	74,400	303,200	228,800
1976	65,000	7,200	48,800	74,400	303,200	228,800
1977	25,000	13,600	11,400	74,400	303,200	228,800
Total	283,900[3]	64,500	219,600[4]	397,500	1,307,900	906,400

Notes: 1) Sources: Atiu Admin. Files: Utanga (1975): CI Ministry of Planning (1978): Bollard (1977)

2) 25% fruit losses due to inadequate shipping and handling are reported for 1974.

3) A debt of $49,000 was owed to the PPMB for "development" costs and is probably not included in this figure, which represents direct Ag. Dept. costs.

4) A full economic evaluation of this project would need to include costs such as: interest rates on invested capital, costs of manpower, machinery, technical assistance and harbour development, and subsidies of sprays, fertiliser, prices and administration.

While I also studied the developments on Mangaia, especially the progress of the Mangaian Growers' Association (4.5) and effects of the move from subsistence to cash cropping (8.2), the Atiu pineapple project and Enuamanu Land Incorporation were always clear subjects for a case study.

I investigated the response of growers to the new technologies of pineapple cultivation, management requirements and whether pineapple development was an appropriate form of land use on Atiu with regard to providing employment, cash income, efficient land use and other benefits to the local community. My case study focused on the particular problems arising from land incorporation.

Data were obtained from detailed interviews with Incorporation, Ministry of Agriculture and aid personnel, and also from other key informants including members of the Incorporation's management committee and individual growers. Factual material was available in the records of the Ministry of Agriculture and the Enuamanu Incorporation. Considerable background material was contained in the Watson report (1977), the CI Ministry of Planning and External Affairs (1978), minutes of the Tripartite Pineapple Reviews held in 1977 and 1978, several APU papers, and Bollard (1977, 1979)

My review of the incorporation scheme brought into focus several conceptual differences between Papaa and Maori world views. Land Incorporation was primarily a Papaa concept. Incorporation of land has been seen by many proponents of large-scale agricultural development as a panacea for problems of fragmented land tenures under multiple ownership. These tenure problems arose initially through Papaa misinterpretation and consequent changes. As a solution, land incorporation also involved a completely different conceptual view to that which underlay the original corporate holdings of land under lineage systems.

Crocombe (1971:189) distinguished between cooperatives, which are essentially "institution centred", and kin groups, which are "ego centre". In other words, a kin-based system of economic organisation and land use is fundamentally different from a corporate type based on

equal individual rights and centralised management. Crocombe listed the following criteria for establishing successful land-holding cooperatives in the Oceania region, in competition with capitalist enclaves:

a) legal security
b) adequate technical skills
c) suitable incentives
d) a set of status relationships which will be regarded as legitimate/valid,
e) internal agreement on aims and operation.

Land incorporation became an important aspect of New Zealand's support for two major agricultural projects in the Pacific area. Both projects began in the early 1970's; the cattle scheme utilising hill country at Uluisaivou on Viti Levu, Fiji, and the Atiu (Enamanu) Land Incorporation discussed here. The land incorporation scheme on Atiu carried on during the 1970's without fulfilling any of Crocombe's basic criteria.

The major premises that lay behind the Papaa concept of land incorporation for the Cook Islands are stated by Crocombe (1964:163-64). (My emphasis is underlined.)

a) To be acceptable to the people, it is likely that any proposed enterprise would need to be so framed that the present owners retained some rights to the land and had a reasonable assurance of an income from it.
b) Contiguous underdeveloped lands in any particular locality could be incorporated into a single block, rights to individual sections being annulled and replaced by shares in the whole corporation in proportion to the separate rights previously held in the area.

New legislation was needed to allow the Atiu development to proceed and the Legislative Assembly therefore passed the Land (Facilitation of Dealings) Act (1970): "An Act to facilitate dealings in Land by providing for incorporation of owners of Native Land and powers of assembled owners". The objective of incorporation is "to enable the body corporate of owners established thereby" to manage the land vested in the Incorporation for plantations "or any agricultural or pastoral business", utilisation of

timber or mining. The Incorporation can "arrange for the lease, of the land or of any portion thereof", and can carry out any other enterprises or activities that are related to the land and "specified in the order of incorporation".

Membership of the body corporate is stated in the Act to be:

> Every person who for the time being is entitled to an equitable interest in fee simple in any land vested in the body corporate as herein before provided...and all such persons are in this Part of this Act referred to as the incorporated owners.

The body corporate holds the land in trust on behalf of the incorporated owners, and has wide powers to manage the lands and finances of the incorporation. The Act states that the Court appoints a "Committee of Management" who are usually elected by the incorporated owners, and this committee is responsible for operating the incorporation. Overall policy for the incorporation can be formed by the owners in a general meeting. Normally votes at these meetings are on the basis of one vote per person, but there is provision for land owners to force a "poll" decided on the basis of votes per owners' interest (shareholding). Resolutions by assembled owners are passed when

> ...the owners who either personally or by proxy vote in favour of the resolution own a larger aggregate share of the land affected thereby than the owners who vote either personally or by proxy against the resolution.

In cases where interests in the land are not clearly defined then the vote is by one person one vote.

Clearly, the main thrust of this legislation is towards land incorporations where landowners trade their land rights for a shareholding in the body corporate. As 'shareholders' the members retain an ability to influence policy through election of the management committee or by participation and voting in general meetings.

However, this was not how the Atiu people saw the situation in the late 1970's when the problems of the Enuamanu Incorporation had come to a head. By 1978, the pineapple incorporation on Atiu had come under review from two sources: the Tripartite Pineapple Review and the local management committee.

The 1978 Tripartite Pineapple Review comprising representatives from the Cook Islands, New Zealand and the United Nations is discussed in section 7.5. The review committee recommended (Rec. No. 18) that the APU should look into the Enuamanu Inc. to assess its effectiveness and find ways to increase production. This request arose at the Review through questioning of the new sub-leasing practices of the Incorporation. Land was being sub-leased for up to five years for pineapple growing and for shorter terms for root crops, particularly cassava (maniota). Sub-leasing of incorporated land was a diversion from the original concept of land incorporation: to farm pineapples on a large scale to obtain improvements in management practices and economics. On the other hand, participants at the Review recognised that farming by individual growers also has advantages through better motivation of growers and labour, and fewer payout problems.

Sub-leasing of incorporated land only became an active policy in 1978, when the local management committee became effective. Although earlier, Tree (1976:67) - then pineapple management consultant - had suggested that Incorporated land should be sub-leased in lots of 30-40 acres. He considered the Incorporation was not working as intended, particularly because there were very low returns to large labour inputs. There was at that stage no management committee, as legally provided for, and management was controlled by the local office of the Department of Agriculture. Tree also emphasised the need to promote greater local participation in management through effective training programmes.

The first management committee of the Incorporation was elected in 1978 by representatives of the 400 land owners and consisted of two members from each of the five villages/districts, plus the manager and assistant manager. The manager was an expatriate volunteer who encouraged the committee. Local members of the committee were mainly active community men, who were also mostly public servants with some entrepreneurial ability and experience of commercial agriculture. Two members of the Ministry of Agriculture were on the committee and therefore faced considerable conflict of interests, as did those men who were also active individual growers.

Independent of the 1978 'Pineapple Review', the management committee sought the services of a lawyer to act on their behalf, and to explain the legal aspects of the land tenure/shareholdings basis of the Incorporation. Legal explanations resulted in debate among the committee on the future of the Incorporation and meetings of shareholders/landowners were held to discuss the situation. Review of the Incorporation by the management committee, landowners and growers also arose because of the policy of sub-leasing. There was resentment among the Atiu growers (who were also landowners/shareholders) that they had to "buy back" their land to plant pineapples. "Buy back" was a reference frequently made to the $15/acre per annum charged by the Incorporation for sub-leases.

Problems surrounding sub-leasing are symptomatic of a much deeper dilemma that lies behind the bracketing I have made of the concepts of landowners/shareholders. From this point I will only use the term landowners whereas according to the 'Act' (Land Facilitation of Dealings Act, 1970), I should be referring to shareholders. The basic understanding of the Atiu people, however, is that they are landowners who have lost rights to their lands with little obvious advantage. Papaa concepts of shareholding are very poorly understood among the landowners and I seriously doubt that the possible benefits of land incorporation have been at all clear.

In fact, benefits perceived by the community probably diminished considerably after the pineapple development - operated by the then Department of Agriculture - ceased to involve employment of a large labour force. Up to 75 people had been employed at times, and in 1974 wage-labour on the development was very popular (Bollard, 1977). By 1977, labour costs constituted 70 per cent of total direct development expenses. Table 7.3.2 shows a breakdown of these costs.

In 1978, the new local management committee made a number of changes to employment policy. Permanent wage workers, who operated tractors and spray equipment, were reduced to three, and sometimes two, men. All other labour was given to contracting gangs and there was a policy to limit these gangs to 15 men at one time, although in late 1979 the gangs were back to full-time employment after management was fully localised.

TABLE 7.3.2

Direct Costs of Atiu Pineapple Development (1970-1977)[1]

	Labour	Fertiliser	Spray	Tractor	Vouchers Mixed	Miscell-aneous	Total
1970	7,218	923	24	753	765	872	10,510
1971[2]	49,297	3,837	69	808		91	54,102
1972	20,311	3,905	515	2,823		469	28,023
1973	17,820	4,178	2,963	4,008		689	29,658
1974	33,277	4,794	-	639		407	39,117
1975	34,621	4,652	683	1,451		127	41,534
1976[3]	22,821	1,405	156	1,801	29,879	-	56,062
1977[4]	14,016	3,061	426	586	6,479	406	24,974
TOTAL	199,381	26,755	4,836	12,869	37,123	3,016	283,980

Notes: 1) Source: Files of Atiu Administration

2) 1971 figures to 31st September
1972 figures include October-December 1971

3) CI Government financial support through the Agriculture Department was suspended on 14 December 1976 because of concern for the high costs of the scheme. During the 1976-77 summer crop, picking was undertaken by Agriculture Department personnel and this cost is therefore not included here.

4) Government support was recommenced in April 1977 and in November the management of the plantations was handed over to the Enuamanu Incorporation following the arrival of the new manager under Australian manpower aid.

Requirements for casual labour over a 12 months period, 1977-78, are illustrated in Table 7.3.3. Casual labour was employed to pick, to collect shoots for planting, to apply fertiliser and for spot weeding. A large labour force was no longer necessary for weeding owing to the use of herbicides, and some fertiliser was also applied by spraying. There was no shortage of men who wished to work on a casual basis and this appeared to be a suitable arrangement for most men, who also plant food and vegetable crops and have numerous social obligations. Casual labour was generally employed on an hourly rate rather than a more efficient contract basis.

TABLE 7.3.3

Atiu Pineapple Incorporation
Employment of Casual Labour

	Sept	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug
Max. no. of men employed on any one day	14	8	8	23	29	28	28	16	15	14	12	12
Total hours worked each month	823	1434	1080	1329	2899	3678	2904	2064	2080	2040	800	592

Total hours worked in one year = 22,828

Total man-days worked = 2,854

Total net income $13,000

Average net hourly return = $0.57/hour

Note: The APU (1978c) paper on pineapple economics showed that as an individual grower a man would be able to earn $6/hour at current input costs and production of 30 tonnes/acre, and $4/hour if all input subsidies were withdrawn.

Source: Incorporation records, Atiu.

There was pressure on the committee to provide permanent wage employment even if these workers were very often not always needed. Those on the management side who understood the necessities of plantation employment had difficulty implementing an efficient policy. Widespread misconceptions of the purpose of labour on the development scheme had been exaggerated by past extravagent policies.

Even at the new basic wage of 75 cents per hour, however, wage labour could not compare to the returns from private pineapple growing. In 1978 there were six growers cultivating pineapples privately. Several could be classified as keen 'entrepreneurs'. By 1979 five of these growers were cultivating 35 acres between them. Twelve other individual growers planted plots of around two acres each. In contrast to the total of 52 acres cultivated privately in October 1979 - mostly on sub-leased Incorporation land - were the 37 acres cultivated by the Incorporation itself. With provision of seasonal credit (SSA) those

individual growers with initiative were able to plant pineapples by providing only minimal inputs - primarily family labour. The Incorporation provided machinery inputs under credit. Some growers maintained that the credit should even cover the cost of hired labour.

A change in employment policy is not the only recent development. Plant selection, a nursery, and standard fertiliser and spray programmes were established. New machinery, including field-handling equipment, was given to the Incorporation under the New Zealand aid programme. Perhaps the most important development was the active new management committee's strong support for a policy of sub-leasing incorporated land to individuals. This policy was part of a questioning and undermining of the basic principles of the Incorporation. It became clear that in addition to the many technical and managerial problems of pineapple cultivation, the Incorporation itself was built on very weak foundations.

7.4 Incorporation Policy: Maori and Papaa Perceptions

Incorporation land is now sub-leased - up to five years for pineapple cultivation and shorter terms for root-crops. This sub-leasing policy was part of a reaction against the principles of land incorporation and was seen on Atiu as a means by which individuals could regain control of family lands. Except for one outsider who had no land rights on Atiu, all the sub-leases were made to growers who would have had traditional rights to that land. In some cases, the men sub-leasing conceded that they would previously have had difficulty in obtaining family agreement to the use of the land. Therefore, the Incorporation can have a positive function by facilitating individual use of family lands on a short-term basis without complicated and protracted negotiations. Families who wished to work their lands as joint ventures, or small incorporations, faced numerous organisational problems without obtaining either the potential economies of scale of a large incorporation, or the flexibility and motivation of an individual grower.

It was clear in late 1979 that the current management committee was strongly guided by the opinions of the family owners in making any decision on a sub-lease. Family rights had remained important. One of the larger growers stated to me that he could not expand his crop on

Incorporation land as there were no further areas for which he could obtain family approval. Only one grower had paid any annual rental. Furthermore, many landowners had been demanding the return of full rights to plan subdivisions for house sites, burial areas, orchard crops and businesses such as motels on their family lands. In many ways this was a 'psychological' need, because security in future use of land and plans to build homes, for example, may not be implemented for some time.

By retaining land rights the owners would have retained identification with their lands within the corporate body. But large-scale withdrawals for no immediate purpose could rapidly have broken the Incorporation into an unmanageable nonentity. In such a case there would be few prospects for plantation-mode production of either pineapples, or citrus - which was suggested as an alternative large-scale crop for Atiu. Although the Incorporation stood as a 'legal' entity, the main factor holding it together was local recognition of the need to retain a 'respectable' organisation for receiving further aid and carrying out crop servicing.

Misunderstanding about concepts necessary to the original intention of the Incorporation was extended even further with respect to problems of shareholding and distribution of profits. Payments of some kind were essential to maintain the interest of the landowners. To date, only one 'payout' has been made (in 1974) and the method of distribution was widely disputed on the island, with allegations of political interference. I have summarised the common attitude of committee members and growers towards payouts in the statement:

> Of course proceeds from a crop on any particular area of land in the Incorporation should go to the landowners of that area, it is their land that is being used.

Atiuan perception of the Incorporation conflicted with the Papaa beliefs that lie behind any corporate arrangement. The first underlying belief is that total proceeds, or gross revenue, are essentially very different from profits or net returns on the total corporate investment. But most people on Atiu did not fully understand concepts such as profits and gross revenue, or subsidy and credit. Also, Atiuans believed

that 'proceeds' achieved by the Incorporation on each land area would naturally be retained by the original owners of the particular lands which were cultivated or otherwise used. This second misconception concerned the idea that total corporate profits will usually be divided according to the size of each shareholding, and not according to gross revenues on different activities undertaken by the Incorporation, or the original owners, on particular cultivated lands.

In the continued absence of a completed survey of family lands, however, any method of payment would be haphazard. There have obviously been no profits to date, and distribution of any profits achieved over the next few years must necessarily take low priority to capital development of arable land. If distributions were to be made on the basis of full corporate profit and shareholding, there would be an important need for discussion, explanation and education. Use of some profits in community projects would have warranted attention. As a further complication the land used for the airfield belongs to the Incorporation, who operate the airfield and agencies. As with pineapple lands, however, the owners of this particular area regarded the profits of the airfield - the most lucrative operation of the Incorporation - as their own, not as part of the corporate profit.

Land owners were fully aware of the large gross revenues being earned from their land, if not the large costs, which were reduced by aid and subsidy. The management committee at times had discussed 'payouts' of up to 50 per cent of gross revenue to landowners. In 1979, hopes for a payout increased when the Government provided the Incorporation with an administration grant.

Land incorporation was imposed on the Atiu people for seven years without sufficient effort either to explain the meaning of essential concepts, or to adapt them to the real situation and Maori understanding. Under its original conception, land incorporation on Atiu did not encourage family farming nor any retention by the shareholders of identity with their family lands. There has been a strong movement to retain this identity. The Atiu people demonstrated a desire to change the basis of the Incorporation to allow individual families more choice in the use of their lands. They were demanding the right to be able to withdraw their lands, even if they lost other privileges and services available through belonging to the Incorporation. There was active lobbying to change the original legislation.

A meeting of landowners in November, 1978 requested that in view of the above problems the Incorporation should be restructured. New legislation specifically for management of the Atiu fern-lands (Enuamanu) was required, and reached draft stages during 1979. But before any legislation could be successfully implemented, a number of difficult problems need full consideration.

Regular payouts to landowners are essential to the maintenance of their interest. Annual payouts would effectively constitute a rental on arable land vested in the Incorporation - the equivalent being an annual dividend paid on the basis of shareholding.

The Incorporation could, in fact, lease land from the landowners, paying an annual rent. Profits would be distributed by shareholding and land owners would retain long-term rights. This policy would emphasise the need for good and profitable use of arable land. Medium-term farm planning would be essential (the APU was available to assist with this work) and a clear policy would be required on the areas available for sub-leasing. Payments to landowners would need to be less than the rental gained from sub-leasing ($15/acre/annum in 1979).

If, as explained earlier, landowners are to retain identification with their family lands within the corporate body, including rights to withdraw completely, then satisfactory mechanisms are needed to maintain the Incorporation. Apart from reasonable notice of withdrawal and good communication of short and medium-term land-use plans, there are several possible sanctions. For example, the committee and growers are very aware that the Incorporation has to be maintained as a 'community' organisation to attract technical and capital aid, and government subsidy. Also, the Incorporation need not be under obligation to take back land that is withdrawn. Servicing of crops on private land could be made at cost plus profit or receive bottom priority. As it was, the main private growers, who were also active in the Incorporation, often received top priority in the servicing of their plots.

Agricultural servicing is an important potential lever of the Incorporation which could be used to help maintain a cooperative organisation. But there was no clear definition of the role of the Incorporation in crop servicing on non-incorporation lands. Confusion became most apparent after Government encouragement of growers'

associations and village associations, which were boosted by prospects of assistance. Whereas the Ministry of Agriculture had previously serviced both Incorporation and private pineapple plots, as well as the citrus plots, all servicing was to be handed to private organisations (see 4.4). Operation of two agricultural servicing organisations appeared to offer the most workable solution, with the Incorporation managing the arable fern lands, while the Atiu Growers Association eventually operate all other agricultural servicing. Marketing of both taro and fresh pineapple exports were organised by the Association in 1979, and the Incorporation committee had already rejected the idea of taking over servicing of citrus.

Good management and administration remain important, however, for any private agricultural organisation. Disputes arose, for example, over the charge-out rates of the Incorporation on individuals' pineapple plots. Growers questioned time charged and effectiveness of services rendered. Yet outside servicing of independent pineapple plots by the Incorporation is important for ensuring the most efficient use of specialised equipment on the island. But, if all the agricultural servicing and management were to lie in only one new organisation, then problems with distribution of power and prestige on the island would be accentuated. Two new organisations would allow for more flexibility in reorganising established authority. Benefits obtained by minimising power conflicts could offset economies of scale available from one organisation.

Overall then, the Incorporation could be a large community organisation utilising economies of scale on its own plantations while providing servicing on contract to individual growers, who would continue to operate with the advantage of better motivation and use of family labour. Other plantation operations, by organisations such as the Kia Orana Foods Corporation, could operate on the same basis as the Incorporation. But this system would involve more than a change in legislation. Any plantation-mode agriculture will evoke conflicts and problems of management that I discuss in earlier chapters. Without satisfactory planning, management skills and educational programmes, I would seriously doubt the success of similar ventures in this mode of large-scale industrialised crops based on a land-holding cooperative.

Consideration also has to be given to the problem of optimum use of the fern lands controlled by the Incorporation. There has been local questioning of the choice of pineapples as the most suitable crop for the fernlands. Cassava (maniota) grows well and there is a good demand in the Cook Islands and New Zealand for cassava starch (pia). The starch can be manufactured by the grower and his family, adding value to the original crop. Several growers have applied for sub-leases to grow maniota. Other crops could be considered and this diversification may become vital. The ability of existing services to ship, process and market an increasing production of pineapples on both Atiu and Mangaia has recently come into question. Large quantities of pineapples were dumped during the 1979/80 season because of shipping problems. Doubt arose as to whether it was economic for the processing factory to handle pineapples at all without an even larger proportion of government price subsidy than that already paid.

With high input costs of machinery, fertiliser and sprays, the overall economics of pineapple growing are not attractive. If subsidies of inputs and prices were withdrawn, pineapples would be grown at a net loss at present production levels (APU, 1978c). Further analysis of the many long-term problems presented by pineapples as a cash crop is provided in section 8.2 through a discussion of energy economics.

Another land-use problem is caused by the steep land that is prone to erosion and uneconomic to cultivate (approximately 40 per cent of the total 600 acres). It would be impossible to retain steep land in the Incorporation if annual payouts were being made on each acre. There was real concern on Atiu over erosion and flooding from steep areas directly affecting the taro swamps below. New legislation might provide an opportunity to attempt more control of burning, cultivation and felling of timber on this land. At the same time, establishment of permanent crops such as trees or coffee might be encouraged further, as these crops have already attracted the interest of growers (see 6.4).

Another important land-use problem originates from a strong demand among the landowners for rights to use 'their' lands for food crops particularly kumara, taro tarua and maniota. There seems to be no reason why such use could not be provided for on a seasonal basis.

An original decision not to allow sub-leasing for food crops was in fact over thrown by the management committee in late 1978. Further provisions for such leases really depends on a suitable multiple-land-use plan, which has never been prepared.

No land-use plan, or new social organisation to use that land, should be conceived without full recognition of the many social and cultural constraints that exist in the rural system where change is being fostered. When basic infrastructural requirements including adequate shipping and markets, machinery and many other requirements are also missing, an example of the worst type of rural planning is created. Incomplete parts of one rural system cannot be successfully transferred to another completely different system. Pineapple development on Atiu bears ample testimony to this thesis.

7.5. Conclusion on Land Incorporation/Plantation-mode Crops

It has become abundantly clear that economies of scale must be achieved if basically industrialised crops such as citrus and pine-apples are to succeed in an isolated island setting at a considerable distance from both input supplies and markets. Appropriate scale might possibly be achieved by central development in a plantation mode, with associated small family plots benefiting from established servicing and other infrastructure. On their own, very few small family-based producers could meet the demands of specialised management techniques and long-term,high-cost investment.

There are many problems in plantation agriculture. Large-scale employment of labour has not been efficient. New management systems cut across established authority, with consequent breakdowns in coordination and communication. Mechanisation and increased use of agricultural chemicals pose problems of supply and escalating costs. Internal transport to central processing facilities has always been difficult and improvements to harbours, lighters and handling equipment are expensive. Considerable, further external aid will be required if either citrus or pineapples are to be produced and processed at realistic prices.

Land tenure remains the most obvious constraint to plantation-mode development. Fragmented land holdings might be successfully incorporated into a cooperative land-holding body. But none of Crocombe's criteria (listed in section 7.3) for successful land-holding cooperatives were met on Atiu.

I suggest that the following more detailed criteria were not properly considered with respect to particular problems arising in the Atiu development.

a) Families were alienated from their lands by new legal provisions. (Incorporations should clearly consist of family lands. Families should have rights to withdraw, and specific opportunities and mechanisms for settling liabilities/profits-improvement should be established. Onus would therefore be placed on management to perform successfully. Advantages of incorporation have to be illustrated.)

b) Rights in the Incorporation were not clearly presented. (Votes can be based on a wide range of criteria: by shareholder or family representative, by acre or valuation, etc. The full range of options should be considered by all concerned. Representation by district may be important.)

c) Management was not always appropriate to the local setting. (Management techniques should be broadly based: can a committee replace an individual, for example?)

d) Sub-leasing was usually confined to members of the family group whose land was involved. (Exceptions have to be made for those with insufficient planting land and 'outsiders' such as teachers or pastors, who may well have initiative to plant, and a suitable mechanism is required for arranging sub leases.)

e) Profit sharing has created complex issues. ('Profit' is often a new concept which involves detailed accounting procedures such as balance sheets and depreciation. Profit sharing may have to be related to land use and production. Perhaps the best answer will be to 'share' profits through rents, wages and reinvestment, with remaining profits used for 'community' projects.)

Two further key problem areas for plantation-mode development emerged on both Atiu and Mangaia. The first is the lack of trained and experienced local managers and administrators. The second is the lack of attention given to the vital educational role that the growers' organisations must play. The growers want the income and benefits of commercial agriculture, but have great difficulty understanding many of the economic and administrative aspects involved. This understanding will become essential if they wish to control their own affairs, while pressures ranging from world economics to local politics continue to exert an increasing influence.

But information movements should not be onesided. In this chapter, and chapter six, I have illustrated the importance of relating information movements to their origins and their effects. A mixture of ideology (modernisation) and theory (diffusion) has placed undue emphasis on one-way processes of communication, advice and extension. While social change accelerates, the need for new ideas and communication will increase. However, new innovations, projects and 'development' must be accompanied by much greater consideration for the rural systems in which change is being encouraged.

The pineapple development schemes clearly showed conflicts between Maori and Papaa conceptions. Because this development was planned, and largely implemented, by people with a primarily Papaa orientation, there have been endless problems. While change towards cash crops must inevitably involve Papaa ideas, it is important to adapt these ideas to their new setting. This adaptation will be assisted by more Maori content in the conception, planning and implementation of new projects. The future stability of rural societies in the Cook Islands will depend on this improved planning.

To assist with the design of rural projects and new technology, it is important to examine the movement of information from the rural people to the administrators, planners and aid agencies. I use the term 'feed-back mechanisms' to describe this flow of information. There are a variety of existing feed-back mechanisms, including the following:

a) Studies by planners of problems facing growers, e.g. the Agricultural Planning Unit surveys and my own studies.

b) Direct communication between growers and extension officers/ agricultural advisers, and thence to planners.

c) Representations by individuals or groups of growers to the administration/planners.

d) Representation by individuals and groups through political channels such as the local Member of the Legislative Assembly.

e) "Reviews" of agricultural projects by government administrations and aid agencies.

I will briefly examine the last of these mechanisms, the review of agricultural projects. In 1978, reviews were made of both the citrus and pineapple projects, and the pineapple review became an annual event. In both cases, these 'reviews' were called "The Tripartite Review of...", in reference to the cooperative involvement of the New Zealand and Cook Island governments and the United Nations Development Agency.

The reviews were oriented around the visit of a UN consultant. It was the consultant's job to make a detailed assessment of the progress in the particular crop, especially of technical and economic matters. While the UN supplied expertise, New Zealand supplied equipment, money and some scientific back up. The Cook Islands participated mainly at a departmental level.

Tripartite reviews were held to discuss pineapple development in 1977 and 1978. Growers had very limited participation in the 'feed back' process. The main focus of this feed back was on the visiting consultant and technical experts who made periodic visits to the project islands (Atiu and Mangaia). In this way they acquire some knowledge of how the growers perceived the project. At best this knowledge was highly biased by the limited personal contact involved. On each island, and for each project, there were several perceptions of the pineapple development schemes. At worst, visitors were 'fed' viewpoints that were well-established among department personnel and local opinion leaders. These ideas were then reflected in public 'policy'. There was therefore an unofficial, rubber-stamp role played by consultants in policy formation.

The most effective forum for reflecting different areas of opinion could have been the actual review meetings, where the representatives of the participants in the project came together to air their views and form policy for the next year. An effective meeting would certainly have led to improved policy making. Unfortunately, representation at the review meetings tended to be biased. Representation at the 1978 Pineapple Review meeting, as recorded in the minutes, was as follows:

CI Government departments	- From Rarotonga	11
	- From project island	3
NZ Government departments		2
UN representatives		2
Project management (from project islands)		1
Representatives of growers	- from project island	nil
	- lawyer	1
Shipping representative		1
		21

Plus one stenographer and myself observing.

Because of the administrative bias in these meetings, important issues were not raised by the representatives of the project islands, nor by government departments, project management or growers' associations. In the 1978 Pineapple Review, vital issues of project administration on Mangaia and land incorporation and sub-leasing on Atiu received inadequate attention. Subsequently, major problems in both these areas continued to develop without any policy guidelines from the Review.

Public participation has become a catch-word among the planning élite, yet this participation continues to be inadequate. 'Feedback' is necessary when there are heavily one-sided movements of new ideas to any society. This feed back would be an essential element in any effectively constituted planning process. Meanwhile, agricultural planning remains frequently ineffective, and worse, completely misguided. Past neglect of domestic food production (as discussed in the next chapter - eight) further demonstrates inadequate planning.

CHAPTER EIGHT

FOOD PRODUCTION AND CULTURAL STABILITY

Since European contact, there have been important changes in systems of food production in the Cook Islands (8.1). These changes have involved a loss of functional autonomy and a move towards increasing cultural and environmental instability. Energy analysis of the transition from subsistence agriculture to cash cropping provides important insights regarding cultural adaptation (8.2). Social implications of current developments include dietary and nutritional changes (8.3), and also modification to the use of food in social exchanges (8.4). There is an increasing dependence on imported foods (8.5). Considerable effort and a shift in national policy are required to achieve a domestic programme aimed at maximum self reliance in food.

8.1 Changes in Food Production

Early cultural development in the Pacific Islands demonstrated a finely-tuned ecological balance between societies and their modified habitats. Islands such as Mangaia, Rarotonga, Atiu and Mauke included limited areas of arable land, but through cultivation of taro in irrigated swamps they were able to support relatively large populations. Taro (Colocasia esculenta) and other aroids were supplemented with additional starch staples including yams, kumara, plantains and breadfruit.

The adaptive importance of taro irrigation systems in the Pacific has been documented by archaeological research. Groube (1975) found that in the New Hebrides this agricultural strategy could be dated back for at least 2000 years and provided evidence that such intensive agriculture supported at least five times the present population. Kirch (1976) suggested that these pre-contact strategies

in the Pacific provide "a model situation for the study of cultural adaptation...", as they involve relatively isolated development for periods of up to 3000 years. If present agricultural developments are to be compared and contrasted to the pre-contact situation with important implications for analysing cultural adaptive strategies, then it is first necessary clearly to identify the major environmental constraints on pre-contact societies.

Irrigated taro swamps were a highly sophisticated agricultural system that allowed larger populations to exist on islands which otherwise had limited areas of fertile land for the production of starch. The constraint imposed on population growth by the requirement for starch-production was, in my opinion, much more important than the constraint imposed by protein resources, which were usually sufficient.

This proposition expands on the argument developed by Beckerman (1977), who discussed the constraints imposed on pre-contact populations in Polynesia by availability of protein supplies. Land for taro cultivation (usually Colocasia esculenta and Cyrtosperma chamissonis) had previously been recognised as an important population constraint on atolls, where there are ample supplies of lagoon and reef fish for protein (Bayliss-Smith, 1974).

But, in discussing the larger volcanic islands, Beckerman (1977:73) noted, with respect to taro cultivation:

> Such a limiting factor would not seem to have constrained the populations of the larger, volcanic islands of tropical Polynesia, where breadfruit, bananas, and other crops, usually grown outside the swamps favoured by taro, formed a large part of the diet. Furthermore, many of these tropical volcanic islands still possess large uncultivated areas of arable land.

Beckerman concluded that the high correlation he found between the length of shorelines and pre-contact populations, for islands with shorelines greater than 50km, indicated that a strong constraint was imposed by fishing resources of the reefs. This argument supported a similar contention by Bellwood (1971:160) who considered that protein resources were an important population constraint on the islands of Mangaia, Aitutaki and Rarotonga.

Evidence from the Southern Cook Group, however, leads me to reconsider Beckerman's hypothesis as it applies to smaller volcanic islands. Furthermore, his hypothesis may also need reinterpretation with respect to the larger volcanic islands where reef length, or island circumference, is in reality also an index of land area and therefore an index of potential for production of starch.

Beckerman (1977:73-74) assumed that "the really important protein resources on these islands were coconuts and fish", and he considered these are basically reef-orientated resources. However, ethnographic information from my own studies and M.V. Mark (1976), in addition to recent nutritional information, point to the utilisation of a broader protein resource base than the reef and coastal fringes on the Southern Cook Islands. Nutritional information,from the larger Melanesian islands,indicates the adequate, and often neglected importance of a wide variety of plant proteins (Thaman, 1979). Native chestnuts (ii) are one Cook Island example. But there were also many inland sources of animal protein including the rat (M.V.Mark, 1976), the freshwater crayfish (koura vai), freshwater fish (kokopu), coconut and land crabs (unga), eels (tuna), the flying fox (moakirikiri) and birds. Also, coconuts grew inland on the foothills around the taro swamps. In fact, M.V. Mark (1976) discussing ecological zones on Mangaia stated:

> We may conclude that two major food resource zones exist in Mangaia and did so at the time of contact, the ecological complexes of kainga and tai. The former, the site of cultivated foods, is the most important of the two. The latter, exploited when weather conditions allow(ed), periodically provide(d) additional protein.

The zone of kainga on Mangaia included the taro swamps and fertile inland soils. The zone of tai included sea, reef and lagoon resources. Bellwood's archeological investigations also point to the sufficiency of inland food resources. He described an inland settlement in the Maungaroa valley on Rarotonga. This "aberrant" settlement appears to have been isolated from coastal resources for political reasons (Bellwood, 1971:151-3). Even the more infertile inland soils provided food, such as fern roots (tuanue-Gleichenia Sp).

Normally, lands were divided so that the resources of different ecological zones were available to each family group. That these ecological zones provided a wide variety of food is clearly supported by all knowledgeable informants, who also confirm that the local foods supplied a wholesome and healthy diet. As a Mangaian story-teller related:

> These are the foods that our forefathers used for healthy bodies and teeth. These things should be recorded so that our children know what our forefathers have eaten. They ate real island food, e.g.
>
> | | |
> |---|---|
> | mamio | (swamp taro - Colocasia esculenta) |
> | kape | (giant taro - Alocasia spp.) |
> | maararau) oi) | (wild yam - Discorea spp.) |
> | ui | (yam - Discorea alata) |
> | koka) utu) | native bananas - plantains |
> | ti | (Cordyline terminalis) |
> | ii | (chestnut - Incocarpus edulis) |
> | pia maori | (Polynesian arrowroot - Tacca leontopetaloides) |
> | akari and nu | (coconut) |
> | paka | (taro tops) |
> | kokopu | (a freshwater fish) |
> | koura vai | (freshwater crayfish) |
> | tuna | (swamp eel) |
> | mangaika | (sea fish) |
> | e poke | (pudding of mamio or kape) |
> | poi | (made from mamio and coconut) |
>
> Looking at these foods, we can see why our forefathers had big bodies and strong teeth compared to the people today. Looking back we should not forget these foods. Also, coconut oil was used for the hair and bodies of the females. Our forefathers lived for an average of 85 years. This is because they used only the native foods, especially the coconut cream.
>
> (Translated by Tangatakino and the author from Aerepo, 1978)

This is not a complete list of Mangaian or Cook Island foods. Older informants on other islands also extolled the virtues of the traditional diet and maintained that this diet ensured a long life with good teeth.

Geographical 'exceptions' in the Southern Cook Group are the islands of Aitutaki and Mitiaro. Aitutaki is an island system that is part volcanic and part atoll, and compared to the other southern islands there is a disproportionately small area of land for the large reef and lagoon. Mitiaro has disproportionately small areas of 'food lands' because of the large saline swamps and lakes that lie inland. On both these islands the capacity for starch production, rather than the availability of ample protein supplies, appears to have been the major limiting factor for pre-contact populations. But this limitation of starch-producing land resources also applied to the other Southern islands of Rarotonga, Mangaia, Atiu and Mauke, which would conform more to the geographical picture of 'true' volcanic islands. I contend that on these four islands the ability to obtain starch became the predominant force in cultural adaptation. Then on the Northern atolls, lack of starch-producing land was a very clear population constraint. People went to considerable effort to develop small areas of taro in central depressions on the atolls, the most advanced swamps being found on Pukapuka (Beaglehole and Beaglehole, 1938). Salt-tolerant, puraka (Cytosperma chamissonis) is the main cultivated swamp plant on atolls. Large atoll complexes such as Suwarrow, with ample reef and lagoon resources, but less than a minimum viable land resource, did not support permanent populations.

Cultivation of irrigated swamp taro was a sophisticated cultural adaptation requiring sophisticated social organisation. The most extensive areas of taro cultivation appear to have been on Mangaia. Social life there was oriented towards the control of swamp lands and water resources, and the organisation of labour for maintenance of the irrigation system (Hiroa, 1934; Allen 1971; M.V. Mark, 1976). Davis (1947) also alluded to the complex social organisation required on Rarotonga to maintain taro cultivation and conserve the whole range of food resources. Food was re-distributed at feasts, where everybody received some, but those of higher status received more.

Communal utilisation of taro was important, as shown by the following story describing the preparation of the feast food poi on Mangaia. Communal preparation of poi was last held around 1974.

> Poi is one of the famous foods used by the forefathers,but it is also hard to make. First of all you have to gather coconuts, some dry, some nearly dry. The coconuts are then husked and the woolly fibres are scraped off the shell, otherwise the fibres will fall into the grated kernel. Five hundred to one thousand nuts are needed for the occasion, especially if the poi is for the use of the whole village. After the nuts are prepared, some big baskets are woven out of coconut fronds. The baskets are lined with banana leaves and/or the leaves of the ti plant. The grated nut (akari) is placed in the baskets and fermented.
>
> For fermentation, some crabs (titiroti) and some fresh water crayfish (koura vai) are collected. These are pounded together and mixed into the grated nut. The baskets are then covered with leaves, tied with kiriau and then left until the mixture is ready for use in about one week.
>
> Next, a big umu is prepared. Then the mamio (taro) is gathered and placed in the umu without peeling. When the mamio is cooked the women gather around the umu and peel by hand. At the same time the men are preparing the papaia, a flat wooden platform used for pounding the taro on. When this is prepared the men are arranged around the papaia. Four or five papaia are lined up in a row. Men squat on both sides with a woman between each man. Everybody has a job to do.
>
> The cooked mamio and coconut mix (ota) are then brought and three to four lots of ota are placed in the middle of each papaia to mix with the pounded taro. When the men on both sides are pounding, they pound in special rhythms and the women dance as they supply the taro to the men. A watchful eye is kept by one woman to make sure no man runs out of taro or ota and she signals if there is a man in need. Other women wipe the sweat off the men.
>
> The last job is carried out by a group of women. They mix the finished, pounded material (kareru) with some more ota and this action is called tapoa. The poi is now ready and can be eaten immediately or kept for a long time, the longer the sourer. A little sugar or ripe banana can be added.
>
> (Translated by Tangatakino and the author from Aerepo, 1978)

I recorded names of at least fifteen varieties of taro (Colocasia esculanta) on Mangaia, and eight were reported to be used in poi.

Communal food preparation was also undertaken when famine was caused by flooding or drought affecting the taro system. Preparation of a wild yam (oi) provides one example.

> Te oi was a famous food used by the forefathers. It was a food that was mainly used in times of starvation. It is hard to prepare. Women collect the oi from the soil. It grows like the other wild yam (maararau). It grows wild in the bush, sometimes with the candlenuts. You dig around the plant taking out the tuber. The skin of the tuber is scraped off with a piece of coconut shell and the tuber is broken into halves or quarters, and cooked in the umu. Once it is cooked it is put into baskets and a family may have as many as ten baskets. The cooked oi is left in the baskets which are tied with kiriau and taken to a stream. The baskets are tied to roots on the bank and the oi is lowered into the river to soak until it is good to eat. It is sour and needs to be soaked. When it is ready, the oi is taken home and the water squeezed out using coconut kaka. The oi is then wrapped in ti leaves and cooked in the umu again. It is now ready to eat.
>
> (Ibid.)

Ti (Cordyline fruticosa) was another communally-prepared famine food. In December 1979, people in the village of Titikaveka on Rarotonga organised the cooking of ti in an umu (umu ti) for the education of the school children. This event had last taken place over 20 years ago. Each household contributed baskets of ti and also another root crop called kape. The baskets of food were cooked in a large communal umu for three days. When cooked, the fibrous root of the ti is very sweet and edible and, most importantly, it can be stored for several weeks. The kape is an accompaniment to the ti.

Decline in the holding of these communal preparations of food appears to be symptomatic of many cultural changes, including the decrease in cultivation of taro, changes in food habits and new attitudes to community, leadership and obligation.

There has been a considerable decline in cultivation of taro. Allen has described the progressive post-contact abandonment of the cultivated swamps on Mangaia. During the last century, upper-valley terraces were abandoned, and by 1945 they were mainly "invaded by scrub and tall reeds" (1971:376). More recently, large areas of the main swamps have been abandoned on all the volcanic Southern Islands. My field surveys show that land cultivated for taro on Mangaia, for example, has declined from an original average area of around $700m^2$ per person to an average of $150m^2$ per person in 1979. This decline has been particularly rapid during the last 25 years. Taro is now used mainly for special occasions, feasts and exchange, rather than daily fare.

Abandonment of taro cultivation is complicated by an additional transition to cultivating taro in raised beds (pai) compared to paddy taro. Taro has been grown in these beds on most Southern Islands since the 1930's. After adoption of the pai technique, on most Islands, large areas of wet taro (taro vai) have been grown only on Mangaia. But even there, cultivation of pai is now becoming common. The main advantage of pai appears to be the possibility for avoiding maintenance of intricate irrigation networks. Cultivation can be more individualistic. Weed-control and fertility are achieved by mulching and very recently by use of imported chemicals. The substitution for taro by other root crops (kumara, maniota and taro tarua) has also contributed to its decline, and nutritionally inferior flour and rice are used increasingly as another source of carbohydrates (see 8.3).

Allen commented:

> On Mangaia, and possibly in other Pacific territories, the decline of agricultural systems which were closely integrated with pre-contact social structures is related to the inability of the society concerned to maintain the systems during periods of rapid social and economic change.
>
> (Ibid.)

Allen maintained that there was a "delicate balance of forces" in the traditional irrigation system which could be maintained only by a well-organised and stable social system.

To summarise: an understanding of the transition from subsistence agriculture to cash cropping in the Cook Islands, and the consequent decline in cultivation of wet taro, requires recognition of the importance of starch-production in maintaining high levels of pre-contact populations. Complex irrigation systems became an integral and essential cultural strategy. There is no reason why such complex strategies of cultural adaptation should evolve without good cause.

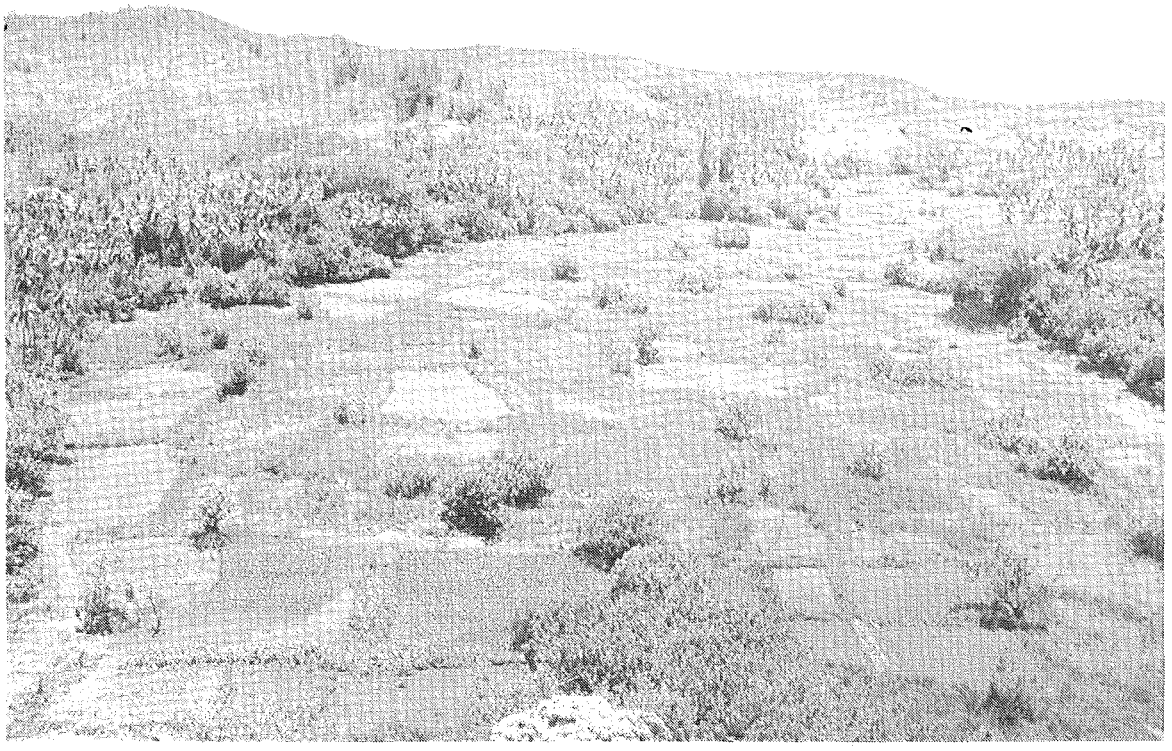
Pre-contact societies exhibited considerable cultural and environmental autonomy within their limited but stable ecosystems. However, problems of adaptation faced by Pacific societies today involve responses to widespread change rather than the maintenance of "functional autonomy" (Bayliss-Smith, 1977:16). Contemporary adaptive

strategies that emphasise a complete return to pre-contact systems are both inappropriate and impossible for evolution is irreversible. Nevertheless, the base-line for present changes is of interest and importance. As Spriggs (1980) has suggested, there are sound reasons for supporting a much wider contemporary agricultural interest in traditional agricultural systems. Valuable wet-land resources have been consistently neglected in rural planning. Further analysis of the long-term adaptive consequences of this neglect is presented in the next section (8.2).

8.2 Subsistence to Cash Cropping: Energy Analysis

In chapter one, I discussed the use of energy analysis as a tool for measuring the efficiency of a society's technological strategies for harnessing primary production. Many agricultural development and rural-aid projects have been based on a premise that increasing amounts of energy harvested per capita represent technological progress. Recent disproportionate increases in the costs of fossil fuels and products such as fertiliser, sprays and machinery derived from them, relative to costs such as labour, have led to a realisation that energy-inefficient crops exacerbate many development problems. Costs of imported crop inputs can rise faster than exports and prices achieved. Money earned from new cash crops is commonly spent primarily on imports of food - which are usually grown in energy-inefficient industrial systems, transported long distances, and therefore prone to rapid price inflation. Further economic dependency is thus inevitable.

Changes from subsistence agriculture to cash-cropping in the Cook Islands provide case studies of the change from an energy-efficient to an energy-inefficient system. As described in section 8.1, cultural development in the Cook Islands manifested a finely-tuned ecological balance between man and his modified habitat - mainly a complex cultural adaptation in the form of irrigated taro swamps. But throughout the Pacific, the authorities in politics, planning agencies and aid organisations have not regarded the traditional agricultural practices as having any contemporary utility. Control and exploitation of island resources are now vulnerable to external economic forces, and the islanders have a decreasing ability for satisfiying an increasing demand for external goods and services.



Taro swamp lands, Mangaia, 1979.

Pineapples, Mangaia, 1979.

It should be noted that not all Pacific Islanders are moving away from subsistence crops. For example, Bayliss-Smith (1977) has discussed how many island communities have maintained subsistence production because of its energy efficiency. Supply from stable traditional food systems can compare favourably to the unstable price trends inherent in producing cash crops for export and buying imported food. The following case study of the change from subsistence to cash cropping on Mangaia, however, shows that for certain 'planned' development projects the situation becomes more complex.

Mangaia is useful for this analysis because it has had two basic crops: taro and pineapplies. People were moving away from taro to production of pineapples, both for the provision of food staples and the earning of additional cash. It is important to recognise that there has been a long history of cash cropping on Mangaia since European contact (Allen, 1969). There has also been use of imported foods and a decline in taro cultivation prior to the recent major pineapple project. This decline has been due partly to monetisation of the economy but also to large reductions in the pre-contact population through disease and emigration. Despite this decline, Allen (1971:377) indicates that in 1967 there was a strong belief in the cultural and economic value of cultivating taro. But since the large increase in pineapple production in the late 1960's, and more recent improvements in returns from pineapple cultivation, taro cultivation has declined very rapidly, as explained in section 8.1.

An analysis of the energy economics for pineapples is provided in Table 8.2.1. The energy ratio for this crop is 0.6 at the wharf on the island of production. This ratio for pineapples falls in the low end of the range for industrialised crops with a high sugar content. Two-thirds of the energy cost is for chemical (fertilizers and spray materials) one third for machinery, fuel and transport; and less than one per cent for labour. In comparison - depending on yield - taro has an energy-efficiency ratio ranging from 12 to 36. This ratio compares favourably with the range established by Leach (1975) for tropical subsistence crops (see Table 8.2.2).

Despite efficient energy ratios in the cultivation of taro, however, growers could perceive that it was more beneficial to participate in pineapple projects. Because of large subsidies from the government and aid programmes, pineapples provided the grower with a financial return of

$4.00 per hour or better in 1978. If this return were spent on imported rice, it could provide twice as many calories per hour of labour input as could be obtained from growing taro. People were therefore more likely to grow pineapples and buy rice, flour and cabin bread for their starch staples, rather than growing and eating taro. The introduction of cash crops that are heavily subsidised by aid can therefore add to the reduction in domestic food production and the increased use of imported food.

TABLE 8.2.1

Energy Economics on One Acre for Production of 35 Tonnes of Pineapples (in Gigajules)

Mechanical Costs (slashing, bulldozing, cultivation, spraying)		
Fuel Cost	9.6	
Machinery Cost	2.8	12
Trucking		11
Chemical Costs		
Fertilizers	27	
Sprays	14	41
Labour Cost		0.5
TOTAL ENERGY COST		64
Energy produced at 1.2GJ per Tonne	=	41
FINAL ENERGY RATIO (Er) = $\frac{\text{Energy Produced}}{\text{Energy Cost}}$	=	$\frac{41}{64}$
	=	0.6

Notes on Table 8.2.1:

1) Energy figures were obtained from Dawson (1978) and unpublished material made available by I.G. McChesney of the Joint Centre for Environmental Studies at Lincoln College. This assistance in preparation of the analysis is gratefully acknowledged.

2) The analysis was based on preliminary figures for the economics of pineapple production prepared by the Agricultural Planning Unit (1978c)
The production cycle usually covers 30-36 months.

3) We used a transport cost of 2 MJ per Kg for the cost of shipping goods from New Zealand.

4) Yields greater than 35 tonnes per crop cycle can be achieved but require increased inputs of energy, particularly for weed and pest control, fertiliser and truck transport.

5) The analysis only includes costs to the wharf on the island by production. The pineapples are then loaded onto a freighter by barge and shipped 120 miles to Rarotonga, where they are trucked to a factory and processed into canned products. Most of this produce is then shipped to the New Zealand market.

TABLE 8.2.2

Energy Ratios for Agricultural Crops

$$\text{Energy Ratio (Er)} = \frac{\text{Energy Out}}{\text{Energy In}} \quad \text{(at wharf or farm-gate)}$$

Crop System	Ratio
Chinese Peasants in 1930's	41
Tropical subsistence crops (typical range)	38 - 13
Taro, Cook Islands	36 - 12
Tropical crops, semi-industrialised	10 - 5
Sugar beet, UK	4.2
Industrialised cereals and grains	3.4 - 1.3
Potatoes, UK	1.6
Pineapples, Cook Islands	0.6
Milk, UK	0.4
Battery poultry	0.1

Sources: Leach (1975); Field Surveys in 1978; Table 8.2.1

A similar effect results from the movement of labour into the service sector, particularly on Rarotonga. Only at the lowest labour rate of 75¢ per hour did it become economic in terms of calorific returns to labour to grow taro in 1978. Labourers did appear to grow more taro where land was available. But many 'outer' islanders had no land and were forced to buy food. There was also more land on Rarotonga for growing other starch crops such as kumara and maniota which provide greater returns of starch to labour. An increasing division of wealth on Rarotonga also contributed to the change towards purchased foods. People with large incomes are very unlikely to grow their own food, and they have the money to buy foods which are convenient and high-status.

Why did more people not grow and sell taro when the financial returns to labour at market prices of $0.40 per lb. were very competitive with other cash crops? First, taro would have had to be grown in very large quantities at nearly half the price to compete with staples such as rice, flour and imported potatoes as an everyday purchase, rather than mainly for social functions. Table 8.2.3 shows the comparative

TABLE 8.2.3

Starch Staples: Calories Purchased for One Dollar
(Rarotonga, December 1978)

Domestic Produce		Imported Produce	
Cassava (maniota)	4280	Flour (Bulk, 10kg)	8200
Sweet Potato (kumara)	2670	Flour (packed)	6430
Cassava Starch (pia)	1630	Rice (bulk, 25 kg)	5370
Taro	1250	Rice (pre-packed)	2570
		Cabin Bread	2470
		Potatoes	2290

Sources: Field notes; CI Statistics Office, Statistical Abstracts; Plucknett (1970).

costs of the main starch staples in 1978. Secondly, the family taro patches tend to be small, and not many people see taro as a cash crop. There are a few 'entrepreneurs' on Mangaia, Atiu and Rarotonga who were growing taro on a commercial scale with areas larger than $2000m^2$. Part of this production was destined for export and this may have tended to hold the local price at higher levels. Finally, there has been very little official back-up, in extension or research, to improve productivity of either taro or the other more productive starch crops.

The change from an agricultural strategy based on starch production to a new strategy based on cash crops has been a change from stability to instability. Yen (1979:79) discussed the effects of a move into a cash-cropping mode and concluded that while dramatic population losses and cultural changes have offset the immediate effects, it can now be seen that the move has widespread implications through the loss of "technological-environmental" control. Bayliss-Smith (1977) characterised the changes as involving the loss of "functional autonomy". With this terminology these two authors have tried to label the long-term cultural effects of the degeneration of traditional agricultural systems.

Unfortunately, the changes already perpetrated have led to unstable systems that are not easy to restabilise, and, as a result, the implications for agricultural planning and social life are far reaching. For example, the loss of soil resources through accelerated

run-off and erosion has followed the clearing of fern cover on hillsides used for pineapple cultivation. Unusually frequent flooding and siltation have caused extensive damage to taro plots in the lower parts of the catchments on Mangaia and Atiu, and people on both islands drew my attention to their concern about this damage. Furthermore, the irrigation systems have already deteriorated through lack of maintenance, compounding flooding problems. Poor water supply causes more plant diseases and weed-control problems. Declining health standards through changes to traditional diets are of further concern and discussed in the next section (8.3).

A dependence on imported foods has many implications for future social and economic instability (see section 8.5). Dependence on external economic forces is reinforced by the escalating demands for energy that are inherent in most cash cropping. Pineapples have become uneconomic from a national viewpoint and require large subsidies of inputs and prices to maintain grower interest. Energy analysis of pineapples helps to show that input prices are likely to increase very rapidly. Therefore, further aid will be required to sustain this crop.

Environmental and economic changes are closely integrated with cultural changes, as traditional foods and food-producing systems are important to cultural identity (8.4). The many social and economic changes outlined in this dissertation are part of a complex cultural and environmental change which involves a move towards instability and a loss of functional autonomy.

Like other Pacific Islanders, such as the Fijians (Chandra, 1979), the Cook Islanders traditionally grew food crops with efficient energy ratios. Chandra has suggested a theoretical objective where, when dietary requirements for high-energy crops have been filled from local resources, national production can then be oriented towards cash cropping for other requirements. When translating such an objective into comprehensive agricultural and food policies, there is a need to encompass a review of the relationships between household food production, domestic food production through crops, and production of export crops for cash incomes. Energy analysis makes a useful contribution to such a review. Changes in food production cannot, however, be isolated from changes in food preferences, and this topic is expanded in the next section (8.3).

8.3 By Bread Alone? Food Preferences and Nutrition

Changes in food preferences and nutrition are an important and integral part of the move from subsistence agriculture to cash cropping and other employment. Certain types of food are normal to specific social groups, and as the social or physical environments of those groups change, then food preferences and nutrition can also be expected to change. Although individuals may not recognise the social significance of their food choices, they do perceive changes that they and others have made from established patterns (Back, 1977:32).

Historical observations and records are a useful source of information for comparison of past and present food patterns. Current observations are most important. In a time of rapid change, they are likely to show considerable variation between different social groups and geographic locations. Contemporary food habits of Cook Islanders demonstrate the same mixture of traditional Maori and Papaa food as do the values of the people.

Patterns of pre-contact food consumption were altered by the advent of explorers, missionaries and traders. New pigs, poultry, a wide range of vegetables and fruits including oranges and bananas, and new rootcrops such as maniota (Manihot ensculenta) were introduced by the Papaa. Spoehr (1973) noted that by 1887 ships frequently traded sausage, tinned pork and beans, tinned salmon, flour, sugar from America and biscuits from New Zealand, for island produce. More recently, settlers, expatriate administrators and servicemen in World War II brought increasing changes. Travel by Cook Islanders overseas, and circular migration, have added to that change. Since jet air services began in the 1970's, airfreight services, tourism and large increases in travel and migration have compounded both social change and, inevitably, changes in patterns of food-use.

Imported starch foods have become an important part of the Cook Island diet. Bread, flour, rice and biscuits (cabin bread and cream crackers) are often more important daily staples than root crops. When they can be afforded, tinned fish and meats, and sometimes eggs, are used as sources of protein. On outer islands, these imported foods are

not always available, but imported foodstuffs have become so necessary that an island is often said to be 'out of food' if there is no available supply of tinned meat or fish, flour, sugar or salt. Without these commodities the peoples' diet becomes sparse.

Although the present cost and convenience of these imported foods makes them everyday basics, they do not usually have sufficient status to be an acceptable basis for feasts (umukai - as described in the next section). Bread (or doughnuts) are often valued as a gift on an outer island with limited or no baking facilities, but flour products are not seen to be as truly satisfying as taro. This attitude is explained by the idea that bread is not filling, it does not 'stick to the stomach' as taro does, therefore more of it must be eaten to obtain satisfaction. Nevertheless, bread has achieved a certain status, and some 'progressive' outer islanders with cash income go to considerable lengths to arrange for bread to be airfreighted from Rarotonga.

Bread and cakes make appearances at important, non-traditional occasions. The following note in the Cook Island News (7 September, 1979) referred to the ceremonial hoisting of the new national flag:

> In response to a request from Mitiaro, six trays of bread and a number of cakes, which the people of the island are paying for themselves, will be sent to Mitiaro by air in time for the ceremony.

When there is little or no traditional food the occasion is called a "cup-of-tea". A large amount of food will usually be involved but it will include bread, doughnuts, scones and cakes, rather than traditional Maori food.

As food preferences have changed, ranges of choice have extended, with the value and status attached to each type of food taking on different meanings in different contexts. For example, at one umukai breakfast that I attended on an outer island, the host and close friends chose bacon, eggs and coffee; visitors from Rarotonga and I chose the umu food of fish, taro, coconut sauce and drinking nut (nu), while the host's labourers ate tinned meat, cabin bread, boiled maniota and tea.

Food eaten varies greatly by island, social status and occasion, but there is often little variation in the daily fare of individual households. Supply varies geographically. Southern islands, except

Mitiaro and Aitutaki, have a good potential taro supply, for example, while root-crop cultivation in the Northern Group is very limited. Rarotonga has much the widest selection of imported foods, with several warehouses and supermarkets, and numerous small shops as distribution outlets. On outer islands, imported foods are often restricted in supply. The relative ease and storage of imported foods has changed. Refrigeration has become common in Rarotongan homes (401 Rarotongan households in 1966, and 1179 in 1976 had refrigeration - CI Statistics Office, 1977), and especially in shops. With new power units established on islands such as Atiu in 1978, frozen meats and icecream became available at stores. New local air services have led to airfreighting of perishable foods such as meats, eggs, cakes and bread from Rarotonga to outer islands, and local delicacies from outer islands to Rarotonga. International air services have facilitated considerable imports of food products, including bread and fresh vegetables.

Most households have six to ten people eating meals. Some households eat their main meal at mid-day, while others eat when members return from school or work. Not all members necessarily eat at one time, as the food can be eaten hot or cold. Either root crops or imported starches are the basic ingredients (see Table 8.3.1). They are usually boiled on an open fire, a kerosene stove or, less often, a gas stove. The earth oven (umu) is rarely used for daily cooking. Doughnuts, or more usually simple flour and water fritters, are fried. If available, boiled fish is served, otherwise tinned meat, fish, spaghetti, or Irish stew is eaten - normally unheated. Boiled taro tops or cabbage are the most common greens, but they are not always served. Coconut sauce (made from the mature coconut - akari) is the most frequent condiment, although tomato sauce is becoming popular.

A popular way of serving the protein and vegetable ingredients is to make a tiopu (a word coined from soup). This one-pot stew is a good means of feeding a large household. Tiopu usually includes onions. Curry powder is sometimes added, then vegetables such as beans, capsicum, cabbages and tomatoes, followed by tins of fish or beef. If watery, the tiopu is thickened with flour. Other meats such as mutton flaps, chops, mince or goat are used, but they are not common. The main advantages of tiopu are that it requires little fuel to cook, is quick

and easy to prepare and can be readily extended to feed any extra family members, visitors or labourers who might be sharing the meal. As more women - from grandmothers to unmarried girls - have become involved with wage work or operating a family business, they have less time and energy for preparing meals. With nobody at home to prepare an umu, then alternatives such as tiopu have become popular.

Kai ti is a light meal, usually consisting of a cup of tea, or coffee, the remains of a main meal, and bread, biscuits, butter and jam - if they can be afforded. Light meals supplement the main daily meal. Takeaway foods, available on Rarotonga and Aitutaki, include hamburgers, fish and chips, sausages, pies and bread rolls, and these foods are especially popular among younger people with an income.

Some important nutritional variation from the apparent monotony in the diet is obtained in snacks. Snacks found around the house or in the 'bush' include paw paw, drinking nuts (nu), sugarcane, oranges, and other nuts and fruit. On the reef, shellfish, seaweeds and the roe of the sea cucumber (rori) are collected by women and children and often eaten immediately. Bought snacks include sweets, sweet biscuits, doughnuts and soft drinks and foods such as Twisties (see Table 8.3.1).

Advertising has, until recently, had little influence on consumers. The 'coconut wireless' - local communication by word of mouth - is the most common means of communication about food, from supply to new methods of preparation. Most stores list on blackboards the frozen goods they have available. Occasionally, the larger stores advertise food on the radio. Usually, these advertisements are for imported goods such as "cakes from the finest New Zealand dairy products". In 1979, taro from Atiu was advertised on the radio for sale on Rarotonga. Sale of traditional crops is not very widespread, so advertisements for their sale appear to emphasise further changes in attitudes to food use and distribution.

On Rarotonga there is an important and increasing market for fresh fruit and vegetables to Papaa residents, Maoris and the tourist trade. In November 1979, my survey of fruit and vegetables marketed on Rarotonga showed that tomatoes, cabbages and cucumbers were the most popular vegetables at that time. These are useful vegetables in most menus.

TABLE 8.3.1

Common Foods Used in Cook Island Households

Locally Produced	Imported
Feasts	
taro, kumara, pia (for poke)	potatoes and tinned vegetables (for 'mayonnaise')
plantains, yam	noodles and beef (chop suey)
pork, chicken	cakes and doughnuts
sea fish, shellfish, crab	chicken (frozen)
taro leaves (rukau), seaweed	tinned corned beef or fish
Main Meals	
kumara, taro, taro tarua	potatoes, white rice
breadfruit, cassava, green bananas	flour (dough etc.)
reef fish, shellfish	tinned fish and meat
goat meat	tinned spaghetti and stew
taro leaves	mutton flaps, sausages, mince
tomato, cabbage, beans sweet pepper	eggs
	onions
Kai ti and Snack Foods	
left-overs from main meal	bread, doughnuts, biscuits
ripe bananas, cucumber, tomato	(cabin bread, cream crackers)
pawpaw, orange, other fruit	ice cream, crisps, Twisties
and nuts, shellfish	sweets, soft drinks
Condiments and Drinks	
coconut sauce	tomato sauce
lemon and orange-leaf tea	salt, sugar, tinned milk, dripping, cooking oil, jam
nu	tea, coffee, cocoa, Milo, cordial soft drinks.
Bush beer	tinned beer, spirits.

Note: This list includes main food items. A degree of flexibility between categories is to be expected. Some rarely-eaten foods are not included, e.g., ti.

Beans and capsicum - excess from airfreight - are being included in more household menus and are often available in shops. The new commercial aspects of fresh-food supply are illustrated by sales. Bananas, pineapples, and even paw paws and oranges are sold among Maori people, and watermelons fetched from $3 - $14 each. Food habits are changing, and people are prepared to spend money on food, including food they could have produced themselves.

Nutritional problems arise for people living away from their own planting lands and for those who have insufficient money to buy adequate imported protein foods, such as canned fish and meat. Families from outer islands, who live on Rarotonga, usually have limited access to planting lands there and are unlikely to have many local rootcrops, other than perhaps maniota. Carbohydrate portions of an immigrant's meal are therefore more likely to include rice, flour and bread than a family with planting land. Some outer-island people are, however, skilled at fishing and regularly consume sea food, which is a 'treat' to most people on Rarotonga.

Holmes (1954) found that Rarotongan households with more access to planting lands ate a more varied diet. Mackenzie (1973) found that child health and nutrition seemed to be linked with the occupational group of the household's head. She also noted that in families where the mother worked outside the home the children often ate a more balanced diet as there was more money to buy protein foods.

Baddeley (1979) found in Ruatonga - an urban area of Rarotonga - that the households with the least nutritious diets were those with low incomes and little planting ground. The best diets were eaten in households with high incomes, or in low-income households with access to planting land, and the traditional values to utilize the land.

People who have increased cash incomes often spend money on imported, higher-status, but less nutritious foods. Also, children may be given foods they want rather than those which make a balanced diet. Some Cook Islanders believe that imported food is superior to local food, so in an effort to care well for a child they may eat local food themselves and feed the child biscuits and diluted condensed milk. Misconceptions about the value of European food may have arisen because

European children appear to thrive on totally-imported diets, or because of the attitude of expatriates who find local foods unattractive and blame health problems on the traditional diet rather than imported food!

New life styles are an important cause of changed standards in nutrition. As Jabre (1978:16) explained, for example, urbanisation has altered the role of women and the intensification of cash cropping has destroyed the nutritional equilibrium of many Pacific Islanders. Studies and opinions have varied as to the extent of nutritional problems in the Cook Islands. Although serious malnutrition may have existed, "borderline nutrition" has been more of a problem, as it leads to susceptibility to wider ill-health and disease (Mackenzie, 1975).

Extreme views on the nutritional status of Cook Islanders have appeared in discussion with informants and observers, and sometimes in print. Percival (1970) reported that an estimated 60 per cent of pre-school children on Rarotonga were undernourished. A correspondent in the Pacific Islands Monthly (May 1970:49) claimed that this was a result of "ignorance" and "wasteful" spending. In an article in the Cook Island News (9 November 1978:12) Joannides called for a change in school hours to allow children time for a more substantial breakfast than a piece of bread eaten while hurrying to school.

Several studies have been made of nutrition and offer a professional perspective. Faine and Hercus (1951:342) concluded that "malnutrition is neither widespread nor a serious problem except that the influence of European food apparently plays an important part in the very common unhealthy state of the teeth and mouth". They suggested that the prevalence of obesity was due to racial as well as dietary factors. Holmes (1954:16) found the diets of outer-island immigrants on Rarotonga were nutritionally inadequate. She also found the diets of the islanders of Manahiki - where considerable income was being earned from pearl shells - to be insufficient, as the money was spent on less nutritious imported foods. Hanson (1970) found widespread dental problems.

Raoult and Jabre (1976) and Raoult (1977) have reported on a pilot health survey in Aitutaki for adults. "The survey confirmed the high incidence of obesity, hypertension, diabetes, parotidosis

and gout in the adult population, and their relation to dietary excess and imbalance" (Raoult, 1966:27). They found the development of babies from early infancy until eight months was excellent. In childhood, however,

> Protein calorie malnutrition of the clear-cut clinical type (with oedema) is rare, but 25 per cent of children between 1 and 6 years show significantly retarded development in respect of weight, height and head circumference.
>
> (Raoult and Jabre, 1976:31)

Childhood nutrition is a problem in societies such as the Cook Islands where children are expected to fend for themselves from the family table once they can walk.

By school age, "symptoms of chronic protein deficiency were far from negligible. Vitamin deficiencies were the exception rather than the rule, but dental caries were increasingly common and serious" (ibid.:40). Growth of young children was still slow, and infestation by intestinal parasites, which results in a loss of nutrients, becomes a problem until adolescence. Twenty per cent of the children studied showed signs of "under-nutrition". By adolescence, growth measurements equalled US figures, but there was "a tendency to put on fat, especially marked in girls and heralding adult obesity: about 20 per cent of the subjects were affected"(ibid.:47). Tooth decay was still serious, but otherwise the nutritional status of the adolescents was excellent. Raoult and Jabre suggested that diet - based on imported food - and lack of exercise, were the main factors contributing to obesity on Aitutaki.

A comparable situation appears to exist on Mangaia. By 1979 store goods were rapidly replacing root crops as the mainstay of the diet there. Health workers reported that cases of heart disease and hypertension were on the increase. This may have been the result of more efficient medical diagnosis, but the opinion of many on the island was that the increase was real. When a tere party from Aitutaki visited the island, a frequent topic of conversation was the hypertension problems of families and aquaintances.

To summarise, the national pattern of food preference and use has been subject to rapid change and reflects a mix of local and imported foods. Complete diets of local foods are very rare, even on the more isolated islands, but new dependence on imported foods has led to an increase in health problems related to nutrition.

8.4 Food and Social Relationships

In the Cook Islands, food (kai) has always had social importance. A.K. Mark (1977:5) maintained that, on Mangaia, "food is the fundamental basis of the whole cultural system, and is functionally inter-related to all other (significant) elements or components in the Mangaian system". Households (ngutuare) are organised predominantly around the production and consumption of food. Control of land leads to food production, even around house-sites. Ability to produce, or buy, food remains closely related to prestige. Food also has symbolic importance and is frequently mentioned in legends, songs and dances.

Despite much social change, food remains vital in many social relationships, particularly in those relationships which are still largely Maori in their cultural context. Baddeley (1978) has provided an important analysis of food and social relationships with respect to the umukai, a special occasion when feast foods are prepared. She said:

> The umukai is prepared on special occasions to validate important events in the daily lives of individuals and their kopu tangata. To angai 'feed' someone is to place him under an obligation and the most elaborate and symbolically significant 'feeding' that a person can receive is the umukai.
>
> (Baddeley, 1978:

An umukai is a very complex social occasion that involves reciprocal social relationships. These relationships that are evoked can take place in a direct kinship context, and also in a church, work group, village or wider (district, island, etc.) context. Broad participation can occur, for example, at the installation of a new ariki or the mourning feast (kave eva) for an important person. But even on these 'grand' occasions there will be a central organising group, and all participants will have some sort of social relationships with members of that group, with kin relations being the most important.

Umukai are held for a wide variety of reasons including hair-cutting ceremonies, family gatherings, twenty-first birthdays, arrival and departure of relatives and other visitors, church festivals, village functions such as tutaka and the celebration of chiefly rites. Size, physical setting and types of food presented at an umukai can vary considerably. The most common denominator between different umukai is the sustenance, not of people, but of social relationships.

Some appreciation of the nature and variation of umukai centred on kin (kopu tangata) relationships can be gained from the following example of three twenty-first birthday parties held on Rarotonga. Although they differed in venue, guests, procedures, food and size, the social relationships reinforced at each were very important.

The first umukai could be described as 'traditional' or most Maori in context. Elements of Papaa culture were amalgamated, however, as the very occasion - a 'twenty-first' - would suggest. Invitations were sent on printed, gold-trimmed cards. The feast was held in a large modern community hall. Food was presented at a top table for special guests and on two long trestle tables covered with white paper for the other guests. Pork, chicken, corned beef (not tinned), fish, taro, kumara, taro tops (rukau) and 'pudding' (poke) were all cooked in the umu and piled on the tables. Smaller quantities of 'chop suey' (noodles, beef and vegetables with soya sauce) and 'mayonnaise' (a moulded potato salad with tinned vegetables and beetroot) were spaced along the tables. Despite the imported ingredients, each is now considered to be a Maori dish, and they are common at umukai.

The umukai was held by a man who had chiefly status and was also a political figure. He explained that this would be an occasion when I could truly gauge the extent of his support, not so much as a politician, but as a community leader. He emphasised that there were many people who supplied food and helped with cooking and other preparations. Telegrams and money-order donations from New Zealand relatives and supporters were shown to me with pride. Although this was mainly a CIP family and occasion, relatives and local people from both politcal parties were present.

After a prayer, important guests - close family members, those with titles, and Albert and Mrs. Henry - were formally called forward to sit at the top table. The food was washed down with orange juice,

or whisky served from tea pots. Speeches were made. The host's daughter had been brought up by her grandmother. The grandmother spoke, in an outer-island dialect, describing the girl's childhood. Despite a translation into Rarotongan, few listened to the story. Four dozen shell necklaces (pupu ei) two garlands of flowers (tiare maori ei) and two head ei were heaped on the girl. These important traditional gifts came from the outer-island home of the grandmother.

Further speeches were made, a birthday cake was cut and distributed, and a mirror in the shape of a key was presented. The last of the food was consumed and, after waiting in a queue to pay their respects, the two hundred guests left for their homes and local 'night spots' to relax.

The second umukai was also held for a favourite daughter and her parents were also of a chiefly family; the father and mother were both government servants. This occasion took place at the family home, and a large corrugated-iron roof was constructed for shelter.

Kin and people in the district (tapere) concerned, were widely involved in preparations. Although comments were made that there was less assistance than in the 'old days', there was no shortage of labour for preparing the umu, making poke and a myriad of other tasks.

Meetings were held, lists compiled, and at least three extra households and five work groups under expert leadership were coordinated to bring the feast to fruition at the designated time of 5.30p.m. Food was ready right on schedule, even taking some guests by surprise. Two small tere parties were visiting the district, and a special effort was made so that the feast would be memorable for them.

People from both political parties participated. They worked together during the preparations and commented on their joint participation because of family, friendship and district obligations. Politicians attended, but maintained a low profile.

Overall, there was considerable 'modern' content to this feast. There were Papaa foods such as coleslaw and curried chicken in addition to a wide range of traditional feast foods, which included shellfish such as paua from Aitutaki, octopus and seaweed. Orange juice was served.

There was no organised seating plan apart from the tere groups and a small head table for the close family, although visitors and important guests such as politicians were ushered to the front after initially sitting at the rear. The occasion began with a prayer, but was less formal. A master of ceremonies with a microphone kept proceedings moving, and there was singing and dancing by the family and visiting tere parties. A key was presented and birthday cake distributed but no formal donations of ei were made. As in the first umukai, workers did not participate in eating with the guests. After the speeches, visitors paid their respects and left quickly.

Finally, a very 'modern' twenty first can be considered. The Maori father and Papaa mother operated their own business. Guests gathered late in the evening, several after nine o'clock, in the substantial modern home. They included a mixture of Maori and Papaa people. Beer and spirits were consumed, but the feast, laid out on a covered billiard table, was still the focal point of the evening. In addition to the traditional umu foods, there was the birthday cake, fruit salad and ice cream, coleslaw, Chinese-style dishes, curried chicken and extra vegetables. Proceedings were informal with, most unusually, no prayers or speeches. Also, guests and cooks all ate together. The food was prepared by the nuclear family and close relatives.

Participants included strong 'Demo' supporters and no CIP's. In addition to family and friends, there were also business associates present. Local (district) relationships were not significant in the preparation and donation of food. However, the social relationships being maintained were still important. Therefore, the umukai has adapted with social change and retained important social functions even in a 'modern' context with many Papaa characteristics.

It is interesting to note our own participation in these feasts. At the first we were treated no differently from the majority of other guests. Only one other Papaa attended. At the second, we were involved more as members of the district, participated in preparations during the day, and were seated forward with other 'visitors' and Papaa guests. At the 'modern' umukai we were equal participants as friends and associates. In addition to helping with food preparation

at the last two, we made donations of money, as did all other guests not giving food or traditional gifts such as ti vaevae.

In addition to umukai organised by kin groups, community groups also prepare food to reinforce social relationships. . Church groups may call on their members or sunday school teachers to contribute to the feeding of a visiting pastor or church group. After a tutaka, womens' groups will organise a feast for health officials, ministers, chiefs and others involved. Schools provide food for visiting school tere parties, advisors, inspectors or other guests, and at occasions such as sports days. Government departments and business groups are not usually involved in using food exchanges and umukai to reinforce their work and exchange relationships which are based on the money system and bureaucratic principles, not kin and village.

For village feasts, the preparation, donation and distribution of food is also important and most people participate. For example, the opening of new houses built by the districts of Rarotonga for the theological college was celebrated by a combined umukai. Each of the three main districts (vaka) asked their households to donate food. Pastors, deacons and some members of vaka councils gave pigs, while most households were asked to donate chickens. Small 'size four' chickens sold out at the shops the day before the feast, for in making a donation, the size of a chicken is not important. In some villages and tapere, communal umu were organised to cook food. This assisted working people who did not have time to build an umu. In our district, a collection of cooked food was organised. Women rose early to brown their pre-boiled chickens and these were placed in a coconut-leaf basket (kete) with cooked taro and several drinking nuts also provided by each household. Many people who did not in fact attend the feast made donations of food worth more than $15 (or half a week's wages).

Not all donors of food attend a feast. One reason given by informants for not attending this feast was that they had not helped build and paint the houses, despite several requests and admonitions for help made at regular Cook Island Christian Church services. Lack of time was the usual excuse for this failure to participate. When painting was lagging, one business-minded grower even suggested they should donate money and hire a painter on contract. But a few key

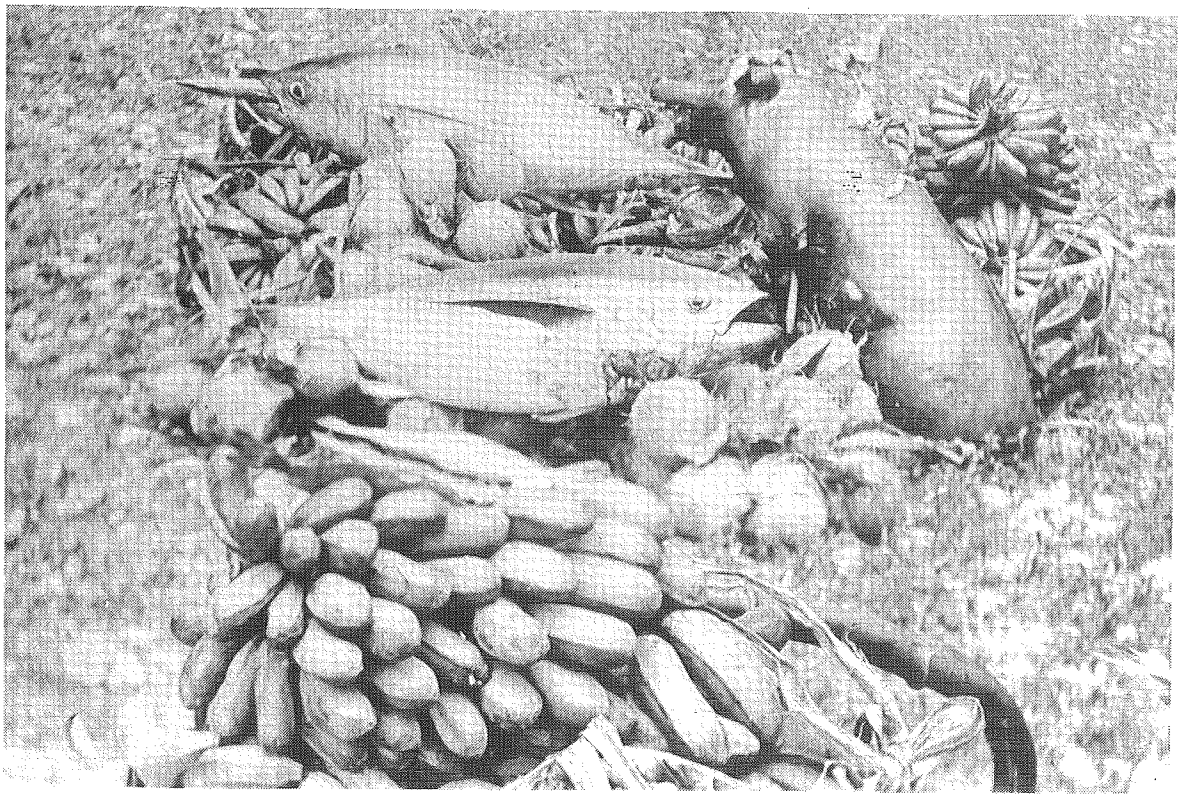
individuals who were community leaders and deacons kept the project going. Despite this breakdown in community labour organisation, most accepted strong social pressure to donate food for the celebration umukai. Overall, social change is bringing new attitudes to feasts. Wider kinship and community relationships are, however, breaking down faster than those close relationships remaining at the centre of a family, village or church. New personal relationships, including some business relationships,are sanctioned with food.

At an umukai there should always be more food prepared than can be immediately consumed. Afterwards, the extra food is distributed according to custom. At the above feast, there were suggestions that some people took more than their fair share, such as a small amount for the truck driver who brought a group of people, and for household members remaining at home. Some took several chickens, and one woman took half a pig. This was considered very unreasonable for a woman of her status. The unruly behaviour was commented on in radio news and widely discussed. People expressed unwillingness to donate valuable food again to such a large feast.

Often very large amounts of food are requested for a village or church feast, and it is difficult to resist the social pressure to conform, although dissent and complaints were often aired in private conversations. Entertainment of tere parties provides an interesting example. On Mangaia, an Aitutaki tere was being entertained. Each day one of five villages cooked and served them food. On the other days local Aitutakians provided food for their kinsmen and visitors from their home island.

After the visitors' return home was delayed by shipping, dissatisfaction was expressed about the amount of food consumed by the 150-member party, although contributions of a shellfish delicacy (paua) and cassava starch (pia) had been brought by the Aitutakians. Each Mangaian household received at least half a four-gallon biscuit tin of the paua, but they claimed that it did not 'agree' with their stomachs. Few Mangaians are partial to the poke made from pia. It was felt that the food being consumed by the tere far outweighed their donations, but

Umukai for Tere Party, Mangaia, 1979



Chief's share of food at Feast, Rarotonga (c. 1904).

pressure to contribute within each village remained strong. After most local chickens were killed, small-sized frozen chickens were air-freighted to Mangaia and bought for $4.00 or more. I watched one sad man kill a young breeding sow as he had no other suitable pig to donate. Portions of the cooked meat returned to his household after the feast were treated with disdain.

Nevertheless, people were glad to have the entertainment and company of the visitors. Dances performed by the visitors were well attended. Groups of older women would sit, sew and gossip together. Men formed 'drinking schools' and young people established romantic relationships. After a tere has departed, pleasurable rather than disgruntled memories prevail, and the return trip is anticipated with relish.

Preferences for island foods by migrants to New Zealand result in reciprocal exchanges of food between the Cook Islands and New Zealand. Fitzgerald (1978) suggested that increased freight costs may reduce this exchange. He quoted an example of a man paying $75.00 to air-freight a box of apples, a popular treat, from Auckland to Rarotonga. I observed sacks of rice being airfreighted to relatives in Rarotonga. Airfreight costs might curtail some exchanges, but returning Cook Islanders will continue to come laden with Kentucky Fried Chicken, cakes and meat. Their relatives will in turn send pia, fruit and vegetables to New Zealand and keep an eye on the migrants' land rights. Tere parties from New Zealand bring tins of cabin bread and casks of corned meat. Although not in direct exchange, the casks may be filled with island delicacies such as paua to be taken back to New Zealand. Besides food, handicrafts are also given.

To conclude this brief and selected discussion of the importance of the umukai and other food exchanges, it must be emphasised that although changes have taken place, 'food' has an important role to play in social relationships. Food has an importance far beyond nutrition. (A Tahitian woman visiting an outer island and recipient to several umukai in one day would surely substantiate that fact!) As an important context for reinforcing social interaction, the umukai has shown a marked flexibility and adaptability, while retaining essential characteristics.

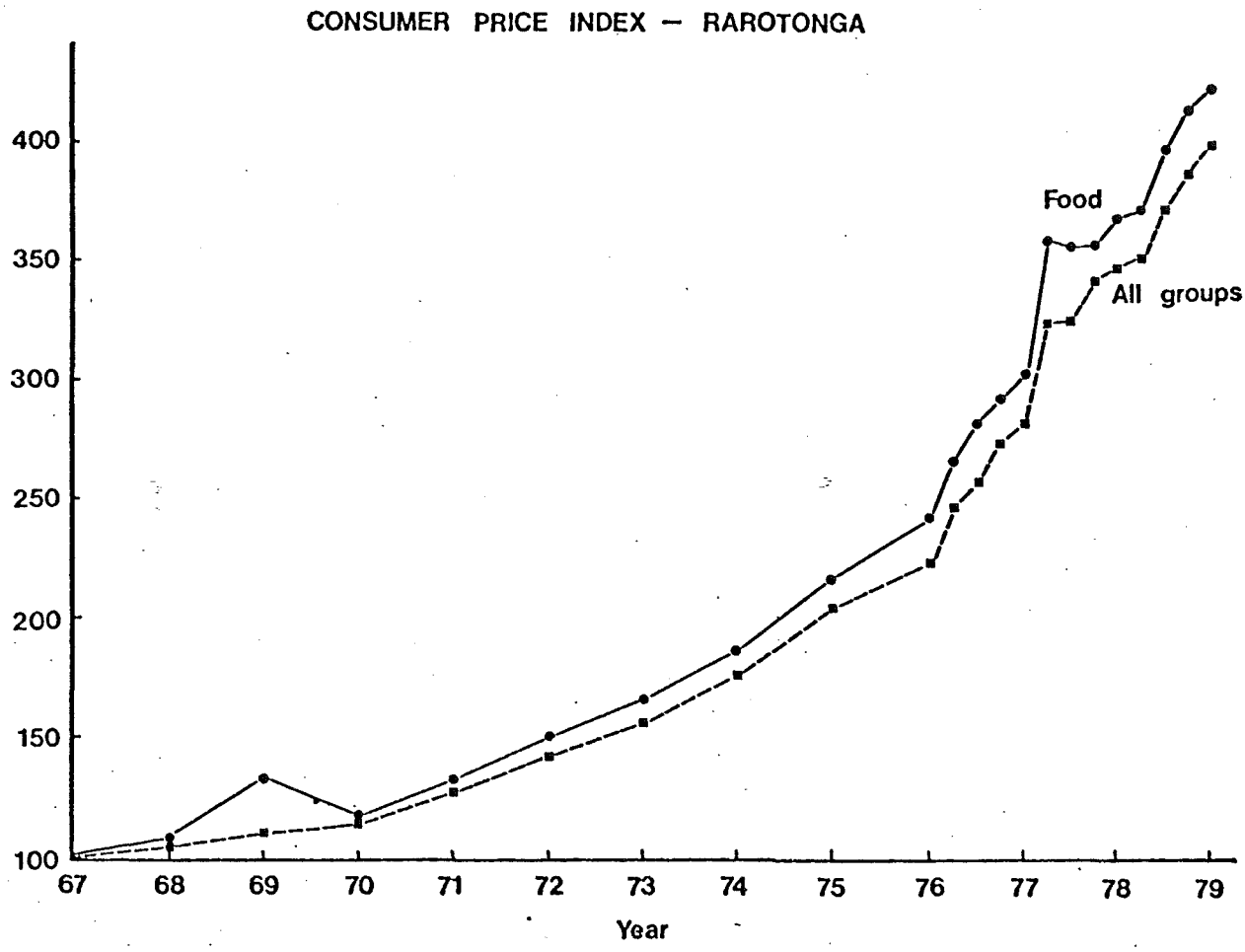
Two important conclusions relevant to agricultural planning can be drawn from this discussion of food. The first is that in addition to daily fare, a good supply of food is required to be used in the maintenance of social relationships. Special foods such as taro, pigmeat and chickens have retained prominance, although imported substitutes are rapidly taking precedence. While Maori culture and social relationships exist, food will be required to sustain them. Secondly, people will continue to invest large proportions of their labour (directly or indirectly) into the supply and preparation of food that is eaten and exchanged for social reasons. These aspects of land and labour allocation have not often been accounted for in agricultural planning. They are more likely to be seen as a constraint than as a prospect for new projects. Production of export crops is not necessarily the most efficient means of allocating scarce development resources if food and social relationships are to be regarded as of intrinsic importance. Using an evaluation of food which emphasises both its nutritional and cultural importance, prospects for improving local production of food must be examined.

8.5 Food Dependency or Self-Reliance?

The Cook Islands have become increasingly dependent on imported foods. As McGee (1975) has explained, "dietary colonialism" is a major problem for the small Pacific states. Apart from the nutritional and social implications I describe in the last two sections, food dependency has serious economic implications. Imported foods originating mainly from New Zealand are seriously affected by that country's rate of inflation. Recent, rapid increases in food prices in the Cook Islands are shown in Figure Eight. Corresponding increases in total food imports have contributed to a growing balance of payments deficit, although the percentage of total imports consisting of food has declined slightly (Table 8.5.1).

As demonstrated by discussions in the South Pacific Agricultural Survey (Ward and Proctor Eds., 1979), Pacific societies are now balancing the prospects of 'development' against 'self reliance'. In this dissertation, I have discussed many problems associated with the predominant 'development' paradigm based on aid-assisted export cropping. On the basis of my research in the Cook Islands, I have

FIGURE EIGHT



Source: CI Statistics Office, Rarotonga

TABLE 8.5.1

Cook Islands Food Imports for Selected Years (1970-1978)

Date	Total Food ($NZ)	% of All Import Commodities
1970	1,346,000	23.3
1973	1,089,000	22.1
1976	2,749,624	20.6
1977	3,731,658	21.3
1978	3,987,180	21.8

Note: 1970-73 values c.d.v., 1976-78 c.i.f.

Sources: Hodgkinson (1975) and CI Statistics Office, Rarotonga.

proposed that much more attention should be given to a rural development programme aimed towards increasing domestic food production (Taylor, 1980). To pursue any prospect of greater economic self-reliance, it can be advocated that substitution of imports - particularly of food and also of energy - with production based on local resources, must receive more emphasis. The possibilities for food import substitution in the Cook Islands are illustrated by figures for selected 1978 imports (Table 8.5.2).

But suggestions for improving domestic food production are not new. In 1955, Jaques Barrau of the South Pacific Commission toured the Pacific to survey food-production resources and methods and to suggest means for improvement. In his notes on Atiu Island, Barrau (1955) stated:

> The area used for subsistence gardening is now certainly smaller than in the old times - that is quite normal considering the increasing importance of imported foods in the present diet and the competition between subsistence crops and cash crops such as tomato and citrus in the agricultural activities of our days.

Barrau suggested that a policy for improving subsistence agriculture on Atiu should include the following:

a) Encouragement to maintain the present "excellent" methods of taro cultivation because "taro is certainly one of the best foods which can be produced in the island conditions" (ibid.);

b) Yam cultivation, which should be encouraged because yams can be stored easily;

c) Introduction of greens such as the nutritious 'bele' (Hibiscus manihot) from Fiji;

d) Cultivation of peanuts, as a cash crop, and other legumes (Peanuts and legumes for 'green' crops were introduced but only adopted temporarily);

e) Trials of maize and sorghum (Trials of maize were made in the 1950's - but there are no records of the results and maize is not grown today);

f) A detailed plan of crop rotations for the experimental/demonstration farm (It no longer exists);

g) Introduction of quick-maturing varieties of kumara and other root crops (This policy was followed and the new varieties are now commonly grown, as are new varieties of taro).

TABLE 8.5.2

Value of Selected CI Food Imports, 1978 (NZ$)

Description	Value (c.d.v.)	Value (c.i.f.)
Live Animals	581	1,499
Pork	2,500	3,000
Bacon	18,290	21,800
Ham	16,130	18,400
Poultry meat	205,300	243,800
Other meat and Preps.	984,886	1,093,912
Eggs	78,100	126,600
Dairy Products	261,201	309,631
Fresh Fish	51,043	66,984
Fish preparations	171,780	204,812
Cereals and preparations	624,453	762,755
Fresh fruit and nuts	29,159	45,041
Potatoes	33,917	47,582
Other fresh vegetables	53,184	79,352
Other fruit and vege, preps, etc.	112,368	114,926
Refined sugar	225,766	259,681
Sugar preps. and honey	64,696	70,437
Coffee	72,228	76,072
Tea, Cocoa, spices	86,373	93,542
Animal feeds	36,185	44,017
Misc. food preparations	251,997	294,329
TOTAL FOOD AND LIVE ANIMALS	3,380,137	3,978,170
TOTAL IMPORTS, ALL COMMODITIES	17,044,295	18,226,511

Sources: Import statistics and files, CI Statistics Office and Department of Trade, Industry, Labour and Commerce, Rarotonga.

Between 1955 and 1961 Gerlach made a series of reports on Cook Islands agriculture. He recognised the dietary and economic importance of taro and other root crops and noted the tendency to use more imported foods on both the Southern and Northern Islands. He maintained that "... the safeguarding of a proper and adequate food supply should form a vital point of the agricultural policy in the Territory" (1955:34). Gerlach suggested that the Department of Agriculture should maintain a regular information service on food, conduct trials with new varieties, species and cultivation techniques, and emphasise extension work. He believed that the introduction of new techniques must be accompanied by education programmes at both adult and school levels.

More recently Allen (1971:378) made a strong plea for focusing agricultural extension on the Mangaian taro swamps. Allen foretold a shortage of subsistence crops, with a strong future market on Rarotonga from locals and the new tourist trade, and also from exports to Cook Islanders in New Zealand.

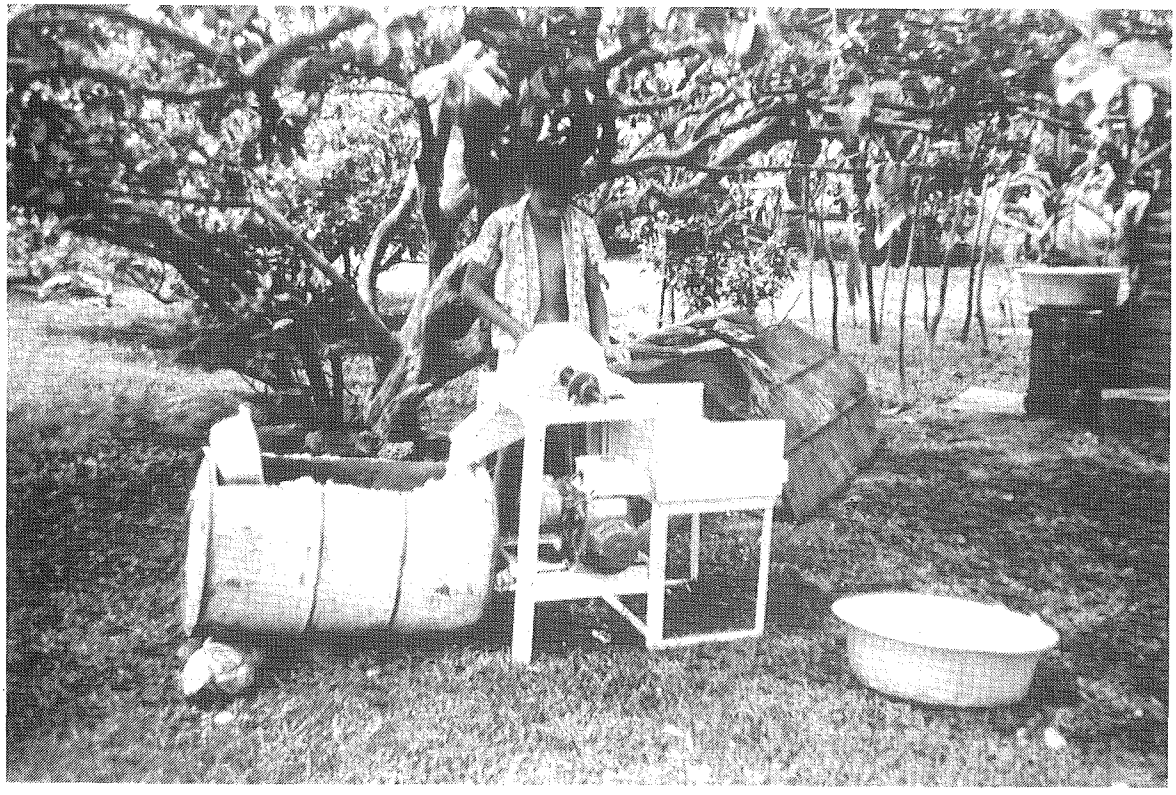
Root-crop production is one aspect of domestic food production that has received little applied interest. In Pacific Island societies root-crop production has been well established socially, nutritionally and environmentally (Thaman, 1974, 1979). Constraints to increased production have been examined at a South Pacific Commission Conference (1976a), but in the Cook Islands root crops have received minimal administrative attention compared to export crops. The report by Franks and Collie (1978), outlining the complete reorganisation of the Ministry of Agriculture, makes no specific mention of the need for research and extension on root crops. There was, however, some recent government interest in joining a United Nations project to increase root-crop production.

Yen (1979a:193) discussed methods for increasing root-crop productivity in the Pacific, including improved cultivation practices, new varieties and control of pests and diseases. Improved labour productivity should be the aim of research and extension. In addition, it would be necessary to provide for infrastructural needs such as storage, transport and marketing facilities. There would also have to be an overall government policy on pricing of starch staples and implementation of import controls.

It is evident that people on lower incomes spend proportionately more on food than those on higher incomes. As one policy, controls on food imports might stimulate domestic production, but if there were no increases in local production food prices would increase and income distribution would be changed. In an alternative policy, food crops could receive direct subsidies on inputs or be subsidised indirectly by research. Increased output of local food crops could reduce prices, but returns to growers must be competitive with other crops and investment opportunities for land and labour. Either policy would require government funds and probably external aid.

Technical developments for rootcrops must therefore take place within the coordinated framework discussed in chapter one, with a balance sought between national and community objectives and constraints. Cassava (maniota) production has provided an example for possible application of the proposed Rural Systems Approach to agricultural research,(as discussed in section 1.4). Alternatives to pineapple cropping are needed for the fernlands (see 7.4). Maniota could be a suitable alternative crop, as it is already part of established social and agricultural systems. Growers on several islands have used a variety of methods to increase production (e.g. tractor cultivation), to carry out more efficient processing (e.g. mechanised grinders) and to broaden uses and marketing of extracted starch (e.g., local sale, export, and exchange with tere parties). This initiative could be encouraged by a wide range of research (agronomic, processing, marketing, use of 'wastes' for stock food and production of fuel alchohol, etc.), but this research and development must identify and complement current change. It must be conducted within the existing rural system.

Livestock production provides a further example of the possible implementation of the RSA. As demands for imported protein have increased, livestock schemes have been popular in Pacific development programmes, but attempts at import substitution have been based on production methods that have included inappropriate use of stock, technology and capital. The poor performance of cattle projects, intensive piggeries and poultry units bear ample testimony to the difficulties involved. Problems of income distribution add further complexity. Pig and poultry requirements could be economically filled



Grinding and extracting starch from cassava, Aitutaki, 1979.

by a few large producers (see chapter six). Production by small producers, through a rural development programme, would require different national inputs, but would result in a different distribution of income. Blackie (1978:8) discussed these problems with relation to the poultry industry in Western Samoa.

A Rural Systems Approach to livestock development must include examination of technical changes at a producer level. Some growers have already made notable progress with little outside assistance. Innovations that were being tried with pigs included cross-breeding of local and imported stock, retaining hardiness and disease resistance while introducing better growth potential. Some growers realised that this new growth potential has to be matched by improved feeding, through small inputs of purchased protein feeds and cultivation of surplus food crops, particularly kumara. Expensive but effective de-worming treatments can be employed with dramatic results and reinforced with preventive methods. Some slow progress was being made towards better methods of management. Several growers on Rarotonga (excluding the commercial pig keepers who also benefited from these techniques), and at least one on each outer island, were interested in practising these changes. There was also some interest expressed in goats and poultry.

The primary aims of a national livestock development programme would therefore be improved household nutrition, provision of cash incomes and import substitution. External sources of technical/economic inputs such as breeds and feeds would be minimised. But in a wide-ranging rural programme, both research station and farm trials - experiments with local feeds, for example - would remain necessary, in addition to fostering local innovations. Further sociological aspects to consider include problems of providing satisfactory returns to labour and an increasing readiness to purchase pork and poultry for both ceremonial use and daily fare. Education programmes would be vital and include advisory services and coordination with schools. These are all aspects of a systematic approach to rural change.

To conclude, it is necessary to re-emphasise that simplistic planning, especially the ill-considered introduction of new agricultural technology, must be recognised and replaced by more systematic approaches to rural change. Future agricultural developments must take place within a national plan. It is advocated

here that greater economic self reliance should be a central objective of this plan. Planners should not under-estimate wider considerations: markets, rural infrastructure and the need to define clearly social and economic objectives with regard to such important matters as income distribution, import substitution and long-term reliance on aid. Future projects and crop developments should originate through an approach that starts within stable and successful agricultural systems, and most particularly, 'traditional' food systems.

Innovation can, and does, originate from local sources, and this must be encouraged. The place of research in this Rural Systems Approach to agricultural change has been examined. Maximum Cook Island input is required at all levels of the planning-research process and must allow representation from a full range of social groups. In particular, local agriculture officers must be encouraged to identify and pursue potential programmes.

When specific programmes are pursued under the RSA, overall national policies are required. Cook Island communities are adjusting to changes which are often caused by external pressures, therefore community development cannot occur in isolation. But international and even national objectives can often bear little relationship to the maintenance of long-term stability in individual communities. If foreign aid, in technology and finance, is to be part of national development programmes, then this contribution must be constantly related to community objectives. New approaches such as the RSA need to be employed in future planning, allowing for both internal and external pressures for change in a rural community. Emphasis must be placed on means for increasing economic independence and opportunity at both national and community levels.

FINAL CONCLUSIONS

Clarke (1977:36) maintained that anthropologists working in the area of human ecology should aim more to apply their findings from a micro-system to the world-scale ecological crisis. In my dissertation I have taken this argument a step further by arguing that human ecology in a micro-island setting cannot be divorced from events occurring globally. I also consider that the current global 'crisis' has both economic and ecological components, and that these are intimately related. My research is intended to be a contribution to the continuing analysis of human ecology.

As with any research programme, many problems for future research arise in this dissertation. I have already discussed in section 1.1 the urgent need for more research by islanders themselves, in other words by the people most familiar with rural systems that are rapidly changing,and it is implicit in my arguments that this research is vital to improved rural planning. Also, I suggest that future research by both metropolitan and local researchers should be undertaken within a wide systematic framework which takes into account both international stratification and man-environment relationships.

The Cook Islands have become a highly dependent micro-state. Centre-periphery analysis can be readily applied to understanding many important aspects of existing rural systems in these Islands. Internally, there is increasing differentiation in power and wealth between those who do and do not have close economic and administrative connections with the growing Rarotongan centre. Regionally, Pacific centres, particularly Suva/Viti Levu, have increasing central characteristics in business and regional organisation, although these centres are in turn dependent on metropolitan countries. In its relationship with New Zealand, the Cook Islands has become very dependent on external aid, finance and investment, technology, education and, perhaps most important in the longer term, employment opportunities. At the same time, New Zealand should also be analysed realistically with respect to its status

as a semi-peripheral state dependent on major world economic centres. Several of these centres, particularly in Great Britian, France, Australia and the United States, have had long-standing relationships with the Pacific region, while European and Asian metropoles such as West Germany, the EEC, Japan and China are all forging stronger new relationships, which are both economic and strategic.

We must continue to ask what are the consequences of international stratification for the small, peripheral island societies. Through international stratification, metropolitan societies have transferred environmentally and socially unsound aspects of their technological and economic systems to 'developing' societies. Metropolitan neglect and ignorance of the massive social and cultural changes that result have been matched by wide disregard for the environmental changes occurring in peripheral societies. Through the move from subsistence agriculture to cash cropping, the people in the Cook Islands are experiencing environmental instability. This instability can be documented with respect to declining soil resources or by nutritional changes, for example, but is most particularly demonstrated by the adoption of technological systems which are inefficient in energy terms. Inefficient technology has a high 'social cost'. The social impact of technical change requires much more attention by planners and researchers, particularly in a systematic framework, as suggested here.

I have illustrated in this dissertation a strong relationship between environmental instability and cultural instability. Rapid environmental changes and instability must, according to my theory of cultural adaptation (section 1.3), be matched by corresponding economic, social and cultural changes and instability. Cultural instability results in rapid cultural change and inevitable social conflict which includes class and generation differences, family disputes and personal (psychological) distress. Widespread social-cultural changes and instability can be distinguished most clearly by the many conflicts between 'traditional' and 'modern' or Maori and Papaa social life.

Economic instability is clearly demonstrated by large balance-of-payments deficits, inflation, emigration and the vulnerability of central industries such as fruit processing.

Social disorganisation is evident in changes to social institutions based on the comparatively new 'traditions' of the family, church and village. Leaders in these institutions have lost much of their role and authority to the new centralised political/administrative system. Community cohesion and activity have been declining. There are many conflicts between old institutions and new organisations required to bring a different scale of management to activities such as industrialised cropping. More effort is required to define and encourage 'appropriate' social organisations in rural communities as part of the adaptation of new agricultural systems.

A new middle class and administrative-economic élite are rapidly becoming established. Entrepreneurs, both individually and in groups, provide a strong impetus for social change. Commuting to metropolitan centres and between the islands, the entrepreneurs are often brokers between 'traditional' and 'modern' ways. By introducing and adapting innovative ideas the entrepreneurs play a vital part in development by and for Cook Islanders themselves. But while increasing numbers of entrepreneurs and small businesses demonstrate some economic growth, this growth is basically limited to a relatively small sector of the community. Polarisation between income groups and differentiation of social-economic classes and status groups will add to social disorganisation and must become a focus for further analysis.

Changes to family life are also very important. Emigration can have severe impact on the basic household unit and wider kinship relationships. Families need the young, economically active members who contribute to feasts, maintain social relationships and provide economic sustenance. Kopu tangata is a complex of kinship relationships and categories which usually have several areas of meaning to an individual. Generally, both kin-based action and descent groups can be distinguished. With respect to land tenure, the Land Court recognises widely defined descent groups, while the family maintains control by emphasising action groups. But individualisation and modernisation have brought important and rapid changes, and individuals are more prepared to use Papaa mechanisms including lawyers, accountants, surveyors and leasing to add to and circumvent family decision making.

Stability in the family system will prevent further fragmentation of land, yet individualisation and social changes that weaken family structures will compound tenure problems. This is also an important topic for future research. Further increases in legal and monetary complexities will probably lead to a situation which benefits a small social élite while many people lose their ability to help adapt the land-tenure system to suit widely-based rural development.

To summarise: I have described a situation of increasing social, economic and environmental instability in a small, dependent island society. The unavoidable conclusion is that cultural and environmental instability in peripheral societies is a major consequence of international stratification.

Attempts to repair metropolitan/periphery economic imbalance through aid programmes, assessed primarily on economic criteria, have minimised and frequently disregarded the importance of social and environmental changes. In fact, problems are more often exacerbated than solved. I have described a variety of experiences that have been gained from introducing new agricultural technology to the Cook Islands. Clearly, more consideration must be given to the appropriateness of existing and planned technological strategies. We require strategies that have an acceptable impact on the environment and society where they are fostered.

Past agricultural projects have been uniformly unsuccessful in achieving sustained increases in production. There are too many examples where large amounts of money, technical expertise and equipment have been invested in projects which produced minimal outputs. Nevertheless, infrastructural support for projects in the form of appropriate and satisfactory management, technical development, transport and marketing has repeatedly been inadequate. Most growers have realistically maintained a short-term interest in earning cash through these projects. Few producers have met technical and management requirements to grow export crops at competitive prices. At the same time, agricultural projects have had many ramifications, stimulating social and economic change and inducing problems such as emigration, dependency on imports and dietary change.

Plantation-mode development has been prominent in current agricultural policy, with the government - supported by aid donors and investors - encouraging growers to pool their lands under more commercial management organisations. But past attempts at production of crops such as citrus and pineapples in a plantation mode have not been successful, while economies of scale remain necessary if these types of export crops are to be grown. Large employment of labour, new management systems and coordination/communication have been fraught with difficulties. Internal transport has often faced insurmountable problems. In the longer term, escalating costs of imported machinery, fuel and chemicals must exclude many export crops which are not very high value or specialised.

Agricultural planning and research - or lack of it - has given inadequate attention to these sorts of 'infrastructural' questions. Then there is the broader neglect of wider social-environmental change. But perhaps the greatest failure in all the agricultural projects fostered has been the lack of recognition of a very important fact: technological changes cannot occur, or endure, without changes in the rest of the rural system concerned.

It is abundantly clear that there must be improved planning of rural projects. Good plans depend on some definition of social and economic objectives in the community concerned. Paternalistic responses are difficult to avoid. Misjudgements are inevitable when technological changes are researched and planned without due consideration for social/environmental matters. Much past planning could be termed simplistic or piecemeal. Important aspects, from markets to consumer behaviour among producers, have frequently been ignored. Planning has tended to follow a problem-by-problem approach.

A firm premise could be established that people are a basic agricultural resource. There has, however, been an overall movement of labour out of the agricultural sector into employment in the service sector, which is centrally based on Rarotonga. There has also been a large emigration of working-age people to employment in New Zealand

This emigration increases when the metropolitan economy is buoyant and is a major aspect of a continuing dependence on New Zealand. Returning Cook Islanders provide a strong impetus to social change. Although emigration lessens population-growth problems, satisfactory family and village life are more difficult to sustain, especially on the outer islands. Social welfare is more expensive to provide. Rural development programmes are therefore necessary to stimulate permanent employment in the agricultural sector.

Rural communities need working-age people, social services and satisfactory employment opportunities. These three requirements are seldom met on outer islands. Young people leave, while many children, elders and less capable people remain. A successful agricultural programme can lift the morale of an island. Too often, unfortunately, the enthusiasm is transitory.

Agricultural/rural development programmes must be matched with community development. In this regard, communities need 'activators': for instance, both men and women who have had training and experience away from their home island. This valuable 'activation' role should be taken into account when the economics of assigning personnel to rural areas are assessed. Encouragement of local leadership and organisations, and support for community projects, is an important aspect of rural development and essential to the viability of agricultural programmes. In turn, local people will be better able to contribute to planning and organisation of projects. Growers' associations offer some prospects for necessary new local organisation but face numerous conflicts of scale and purpose.

There is no concrete answer to the many social problems in agricultural development. Further social-science research is important, especially research that is committed to the understanding and expression of the goals of rural people. A predominance of Papaa ideas will continue while there is inadequate Maori input in planning. Future inputs must range from professional local planners to full public participation. Reviews and evaluation of current programmes are important and require full participation by those people most affected.

Finally, I propose that a more systematic approach to rural development planning should be followed. New approaches require more than recognition of social aspects and community development. To achieve greater self-reliance, much more attention must be given to the adaptation and development of new agricultural technology within particular rural systems, in comparison to emphasising the transfer and adoption of parts of an external technology. The Rural Systems Approach has been proposed in this dissertation as a framework for technical research and development. The RSA includes recognition that there are both internal and external pressures for change in a rural community and that social conditions are related to economic opportunity.

In the Rural Systems Approach to developing agricultural technology, special focus is placed on achieving economic independence and control at both national and community levels. Technology and new farming systems are developed around the knowledge, aspirations and social life of each rural group.

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